The Dental Digest.

Vol. VI. CHICAGO, MARCH, 1900. No. 3.

Original Contributions.

REPLANTATION OF THE NATURAL TEETH.

By F. T. Murlless, Jr., D.D.S., Windsor Locks, Conn. Read Before the Northeastern Dental Association, at Holyoke, Oct. 17–19, 1899.

Among the earliest bits of empirical knowledge in regard to the teeth, and doubtless reaching back to the older civilizations, is the fact that a tooth once removed from its socket could be thrust back into its place and after a time become reunited to the surrounding integument. This performance was uninfluenced by our latter-day acquaintance with dental anatomy or antisepsis, but out of it, by the application of modern dental science, has developed replantation and the kindred operations of transplantation and implantation.

A tooth may become the subject for replantation either through some external influence—as an accidental injury, or on account of a pathological condition or minor accident of the sort attributable more or less directly to the individuality of the tooth itself, as for instance, its position in the mouth or an unusual root formation.

I shall speak more especially of cases in which there have been indicated for some reason both extraction and replantation. Experience in the operations so involved is applicable to any case of replacement of the dental organ. In the treatment of a tooth dislodged by accident it is well, however, to remember that the lapse of a reasonable length of time during which the member has remained displaced is not a complication, and that the absolute removal of accumulations of a foreign nature is indicated, as well as antisepsis.

Extraction and replantation are indicated in (1) persistent alveolar abscess; or (2) abscess associated with pyorrhea alveolaris; (3) in teeth where a broach has passed through the apical foramen and refuses to be withdrawn, or a drill has been broken off in the pulp cavity; or (4) where the careless preparation of the pulp cavity for the pin of a crown has resulted in perforation of the cementum; (5)

sometimes in the case of a tooth the deformity of whose roots has been discovered to prohibit the attempted cleansing of the pulp cavity. Where it is for some reason desired to establish in dependable condition a tooth somewhat prone to resist ordinary operations for cleansing the pulp cavity; (6) as for instance, a third molar or first superior bicuspid upon which a bridge is to be placed this operation is a positive resource and may be determined upon without preliminary. I have it in mind that a tooth having exostosed roots, after amputation of the affected parts, can be returned to its socket and usefulness secured by this method.

The desirability of such procedure being established, an important further consideration is the condition of health and vitality of the patient, which cannot be overlooked as greatly influencing the success of replantation. An anemic condition, or any circumstance or constitutional disease which would be considered adverse to the performance of surgical operations in general, should have equal weight in the case of this operation. A positive contraindication would be furnished by the tooth itself, if through the long presence of dead pulp tissue the dentin should have become saturated with disorganized matter and death of the lacunar tissue have occurred.

Having considered carefully the desirability of continuing a tooth in place, and being satisfied of the capacity of the tooth to resume its accustomed usefulness by reason of its structural completeness and its relation to the articulation, begin by deciding how the tooth after being replaced shall best be supported in the alveolus during the period of granulation. Firmness is essential, and any effort necessary to secure it will be amply repaid in comfort to the patient and as a factor in the success of the operation. If an appliance be considered necessary in order to secure proper support, the impression for its construction should be taken before extraction.

In extracting the tooth great care should be observed to avoid accident of any sort either by checking the enamel or injuring the root or alveolus. It is self-evident that failure to extract a larger or smaller portion of the root will contraindicate replacement of the tooth, and that injury to the gum margin will be marked by a point at which the gum will contract and exposure of cementum follow.

Immediately after the tooth has been extracted and placed in bichlorid solution the alveolus should receive careful examination with the probe that the slightest disorganization or roughening of

bone tissue may be discovered and measures taken for removal of the affected portion. This can be accomplished with an engine bur or a scraper, the shape of which will be determined by the case in hand. At the earliest possible moment the alveolus must be packed with a wicking saturated with a not too thick solution of aristol and chloroform. The selection of this particular combination has been made because fibers of cotton seem less likely to become detached and remain behind to serve as an irritant after the withdrawal of the wicking.

If the time occupied with the examination of the alveolus and necessary curetting has been at all long, attention must be given before introduction of the wicking to the removal of coagula from the walls of the socket and securing as nearly as possible freedom from blood. The wicking should be packed tightly against the walls, great care being taken to avoid giving pain through pressure. The hemorrhage will be comparatively slight if this has been done with sufficient care, and further coagulation will take place in the wicking, so that when it is removed later on there will be nothing left behind. This is desirable because the replanted tooth will occupy the same space as before and the tiniest particle of coagulated blood present will be forced against the tissues and greatly increase the pain associated with the replantation.

To secure necessary dryness for the work upon the tooth, and at the same time maintain an aseptic condition (which seems unavoidably associated with moisture), is somewhat difficult. A napkin moistened with bichlorid affords a most insecure grip upon the tooth for so long a time as is required for pulp-cavity work and the placing of necessary gold fillings, and the constant slipping of the napkin upon the pericementum can but injure it. I feel that a strenuous effort at disinfection of the hands by way of preparation, and afterward keeping the fingers and tooth slightly moistened with the antiseptic, is rational and practical.

Preparation for the work upon the external and pulp cavities should be thoroughly made before taking the tooth in hand. The operations of filling pulp cavity and making necessary gold fillings in the tooth crown may be performed according to the accepted methods of the operator, except that in the pulp-cavity one of the cements is preferable, because when hardened it will allow the immediate contact of the gold in filling without yielding.

It is my practice to shorten the root apically. The degree to which this is done is determined somewhat by the length and form of the root, my idea being to cut behind diseased pericementum, to remove deformities, to save pain for the patient by leaving a slight space in the socket for the blood which will unavoidably drive ahead of the root when replaced, and also to give a place for the gold filling with which I always finish the apical end of the pulp cavity filling, preferring gold at this point because it is non-absorbent and unabsorbable. I cover the cut end of root to edge of pericementum with the filling, finishing with the burnisher, and in the same manner close with gold any perforation of the cementum which may have been made in the effort to cleanse the pulp cavity or prepare it for the reception of a crown-pin.

In the case of a root to which a crown is to be attached an injury to the cementum may be closed without obstructing the space necessary for the reception of the pin, by beveling the margin of the orifice so that the edge tapers both inwardly and outwardly, and then supporting a matrix from within the pulp cavity by use of an orange-wood wedge shaped for the occasion, and arching the space with gold. I have had such a root in place and carrying a crown and in healthy condition for the past six years.

Before replanting the tooth, approximal cavities disclosed in adjoining teeth by the extraction may be most conveniently filled.

When all is ready, and the tooth after having been handled has been placed in the bichlorid bath for a few minutes, the tooth should be taken in the fingers, the root form particularly noted and the exact movement of turn and thrust with which it will be returned to its socket decided upon. Having placed the tooth in the most convenient position to be seized without the slightest delay, the wicking should be quickly but gently removed from the alveolus and the tooth carried to place instantly, that there shall not be the slightest accumulation of blood in the alveolus. Thus a great deal of needless pain will be avoided and the replantation quite possibly prove painless.

The replanted tooth may be sustained by the splint of gold or gutta-percha previously prepared; or a ligature properly interlaced between the teeth of the region and supported by supplementary stays of silk thread passing over occlusal surfaces may be all that is necessary; or the approximal cavities being available, continuous

fillings of gutta-percha may be made reaching from one to the other, and prove most satisfactory.

All soreness of the part will pass away in a day or two, during which time the patient should be provided with proper antiseptic mouthwash, more especially to correct throughout the mouth the results of imperfect mastication. The case should be seen daily, so that ligatures may be kept intact and the part irrigated with an antiseptic solution. It is most unlikely that any occasion for the slightest further attention will arise, but if an inflammatory condition should present the tooth may be removed and examination of both tooth and socket made for the point of inflammation. Irrigation of the socket with a warm sterilizing solution will furnish necessary correction and the tooth may be returned to place. In ten or fifteen days the tooth will have assumed a normal condition which will justify its utilization if desired to carry a plate clasp or serve as a bridge pier. After repeated examination of such cases, running through a considerable period, I am unable to discover them to be in anything but the most satisfactory condition.

I would refer to a case of replantation performed by my father about twenty-five years ago. The tooth, a superior central incisor, is in no way distinguishable in color or condition from its mate, except for the filling on the palatal aspect of the tooth, which marks the opening to the pulp cavity. Recently the tooth had a labio-gingival cavity which required filling, and to the surprise of all concerned it proved as sensitive to the bur as any labial cavity when excavated in the cemental layer. We feel that this incident does not exactly fit into the more recent deductions in regard to the exact relations of alveolar tissue and the implanted or replanted tooth. This operation has with me proved a resource in many cases to which no other method of procedure seemed perfectly applicable.

Discussion. *Dr. D. A. Jones*, New Haven: Can this method of replantation be practiced successfully in cases of empyema? I do not think so.

Dr. Murlless: Fifteen years ago my father operated on a tooth which was very loose and a typical case of empyema, and it was distinctly tightened and saved for use, and for ten years it remained so. I have had such cases in my own practice, but not of so long standing.

Dr. A. J. Flanagan, Springfield: I would ask the doctor if any

living union takes place in these operations, and also how many of his cases have been successful.

Dr. Murlless: I said nothing about granulation taking place, but do not know enough about histology to make positive statements. In the cited case where the tooth was sensitive to bur I secured what seemed to be a live union and a healthy condition. As regards my percentage of failures, I have replanted over forty teeth and all but two of the operations were successful. In one the inflammation was so great that the periosteum was broken down generally, and now I should not undertake the case again. In the other the patient's mental condition and fear of cancer, the depleted physical state and the superabundant granulation which caused some trouble, induced me to extract the tooth, although I should to-day not do so. I have never had a case that showed absorption nor one in which there was not a healthy condition. I have seen absorption from an implanted tooth, but it was not my work. I know of one case of twenty-five years' standing.

Dr. S. G. Stevens, Boston: The first failure I have had in replanting was a case that stood twenty-two years, and then the tooth came out while the patient was fingering it.

Dr. W. H. Rider, Danbury: I think my antisepsis has been perfect and the physical and other conditions have been most favorable, yet I have lost twenty-five per cent of my replantations.

Dr. A. J. Flanagan: Two years ago a man came to me for extraction of a troublesome tooth, the right superior cuspid, and after extracting I noticed that one-half the root had been absorbed. The patient stated that twenty-seven years before he had three teeth knocked out and Dr. W. G. Breck, a surgeon, poured water on this cuspid and replaced it in the jaw. This was not done with the other two teeth because the alveolar ridge had been fractured.

I think if the operation is successful the reason must be found outside of a living union. No histologist will teach that you can revitalize a tooth after the vital membrane has been destroyed. Sometimes bullets remain in the body without irritation—they become encysted—while at other times they cause trouble. I think it is merely an anchylosis or granulation which gradually makes the tooth firm, and not living union. In the latter the teeth are in the vital membrane and nourishment comes from the system, while anchylosis is when a foreign substance remains in a mere opening.

Dr. N. Morgan, Springfield: Twenty-five years ago I saw Dr. Frank Waters of Boston show pictures of transplanted or replanted teeth. Some of them had been in position for years and there was great exostosis, showing that the cementum had taken on new life or else that new membrane had been formed. Dr. Waters scraped off all the pericemental membrane, believing that it must be absorbed before new membrane could be formed, so he helped nature out in this way and had good success with his cases.

I transplanted a tooth for a young man and when it was extracted the wall of the external alveolus was completely gone, so that by passing an instrument into the socket the gum could be lifted. Some days later in a regulating case I extracted a sound tooth from a fifteen-year old boy. I removed the entire pericemental membrane, and as the tooth was not for the proper side, ground off the corner. It was then inserted in the young man's mouth and for sixteen years gave good service. During the whole period there was a little trouble—not ulceration—with the external portion where the alveolus was missing. The tooth was finally absorbed, probably from the diseased conditions. The difference in cases is largely due to the condition of health, and the younger the patient the more favorable the prognosis. Whenever possible a young tooth should be transplanted regardless of the age of the patient receiving it. Its tissues are young and more amenable to healing.

Dr. R. R. Andrews, Cambridge: I believe new life may be formed in the cementum but no new pulp comes, and I doubt whether a living union ever takes place. A pulp once dead is dead forever, but where the periosteal tissue is destroyed the connective tissue from the alveolus will soon attach to it and the tissues then calcify. The tooth, however, is finally absorbed, and it never feels like other teeth, seeming to be a part of the jaw.

I once successfully replanted some teeth for a foot-ball player. The pulps were taken out and the chambers filled with gold. The teeth look well, and I believe there is an attachment of the cementum and that the teeth are alive. Where the periosteum is injured and dies or is taken out, the connective tissue of the jaw calcifies. In such cases there is sooner or later absorption of the tooth.

Dr. D. A. Jones: The pericemental membrane is alive and there is certainly union, but no calcification. The pulp being out does not make the tooth dead.

Dr. W. H. Rider: The most successful cases are where a tooth is immediately put back in place when it comes out, regardless of antiseptics, although I do not discredit them when practicable. In ninety-nine per cent of these cases, however, we should find if investigated that the pulp had calcified, yet the dentin of these teeth is very sensitive.

Dr. F. E. Nims, Leominster, Mass.: My experience agrees with Dr. Rider's. I know a farmer in the country whose boy had two teeth knocked out by a horse. The farmer wiped them off with his handkerchief, put them back in place, and they are doing service to-day. Some man has said that the cause of so many failures in transplanting is the condition of the operator's finger-nails.

Dr. A. J. Flanagan: When a tooth is extracted the pericementum is also, and with the pericementum you have taken away the circulatory system—that which nourishes and develops what Dr. Jones calls the living union. When we replace the tooth we have broken the circulation. Can we believe that those small arteries and veins which have been parted are again brought into exact position so that they form continuous channels, capable of revivifying the teeth?

Dr. M. C. Smith, Lynn: I have seen many cases of replantation, and the most successful are those where an accident has occurred and a physician puts the tooth back, never removing the pulp, and sometimes without much reference as to whether the right socket is found or not.

In extracting I always put one finger of the idle hand on one side of the forceps and the thumb on the other. With this precaution I seldom extract a tooth on either side of the right one, although I often loosen them. When this happens, or when a tooth comes out that should not, I immediately replace it without removing the pulp, and the case is a success. In transplantation I have had uniform failures, teeth being absorbed and dropping out in a few months.

Dr. W. H. Rider: The easiest made and most satisfactory splint is a thin gold one struck up to fit the two adjoining teeth. An impression is taken with modeling compound and fusible metal poured into it; a counter-die made and the splint struck up. In cementing it into place leave a portion to extend across the arch and press on the opposite teeth, so as not to give the three teeth in question all the work.

Dr. D. A. Jones: A patient had her teeth knocked out and the alveolus was badly broken. The splints had to be made quickly, so I ligated the teeth and made a cast, then fitted two pieces of gold wire on the sides of teeth—a crib arrangement—joined with 16-k solder, and in twenty minutes had a splint which was kept on those teeth for four months.

WHY?

By G. W. Snyder, D.D.S., Baraboo, Wis. Read Before the Wisconsin State Dental Society, at Madison, July 18-20, 1899.

One of the queries which presents itself frequently is—Why do dental practitioners seemingly find it necessary to apologize, especially to members of the medical profession, for the title which we bear? So far as the title is concerned, of itself it amounts to nothing; but so far as the worthiness to bear the title is concerned, I do not understand why that of Dental Doctor is not as justly ours as that of Medical Doctor is to the man of medicine.

After we have spent years in hard study and toil, and hundreds of hard dollars preparing ourselves for the right to the degree, and after it has been duly conferred upon us by a reputable college, we certainly should not feel it necessary to apologize to the medical men, or to any other class of men, for bearing the title, as it is justly ours. Dental students are as faithfully taught as are medical students, and they enter into their studies with equal earnestness.

The dental profession arose, or rather developed, because of necessity. To specialize is the tendency of the times, and we can well designate dentistry as a special branch of the healing art, which has grown to be a most important one.

Dr. Ottolengui, in speaking of the manner in which our societies are conducted, says: "We should sit in councils as a body of scientists, not as a social body convened for pleasure." That is the one thing in my opinion which most militates against the usefulness of our association meetings. Further he says: "What we need is not admission to the meetings of the medical men, and a right to share in their councils, but rather such a proportion of medical knowledge as would make us less mechanical in our limitations and more able to diagnose and treat diseases which, appearing in the mouth and within our allotted sphere of action, nevertheless are really but expressions of constitutional disturbances elsewhere."

Discussion. *Dr. J. N. Crouse*, Chicago: To be a thoroughly successful dentist requires more ability than is necessary in any other profession, and when you come across a successful dentist you will find that he is considerable of a man. A sharp lawyer or physician can bluff his way through, but not so with the dentist. I really believe four-fifths of medical attendance is not needed except in the physician's or patient's mind, but in dentistry a condition confronts us and not a theory. I am never ashamed of being a dentist, nor need any man be who is living up to his possibilities.

Dr. T. W. Brophy, Chicago: In answer to complaints that the dental profession was not held in sufficiently high esteem the late Prof. Garretson once said: "What would the people think if Mr. Vanderbilt should go through the country engaging halls and lecturing to convince the community that he was a rich man. Everybody knows he is rich, and nearly everybody knows that the dental profession is performing a great work in the interests of mankind."

Dr. W. H. Carson, Milwaukee: If a dentist has ability he will be recognized no matter where he lives, and I do not take any stock in this whining "that the dental profession is not sufficiently recognized."

MALOCCLUSION.

By C. S. Bradley, D.D.S., Beloit. Read Before the Wisconsin State Dental Society, at Madison, July 18-20, 1899.

It has seemed to me that in the haste to keep pace with all the new inventions little attention is being given by the majority of dentists to the study of the teeth in their individual relationship to each other and that of the dental arches. This relationship constitutes occlusion, and any deviation from nature's plan of harmony and effectiveness is malocclusion. Every observing dentist must be perfectly well aware of the great prevalence of the latter. A week's record would show a startling percentage of cases presenting malocclusion; and from the simple overlapping of an incisor to that involving the teeth of both arches and the resulting facial deformity, they will exceed the normal.

To correctly diagnose malocclusion is important and requires a knowledge of perfect occlusion that can be gained only by close study of the anatomy of the teeth, facial lines, consideration of the changes taking place at different periods of eruption of the decidu-

ous and permanent teeth, and the acting forces that so rapidly change the yielding tissues and control occlusion. It is essential that the dentist get as much insight as possible into the laws and effects of heredity, atavism, degeneracy and evolution.

Dr. Angle says, "All cases of malocclusion may be readily arranged in well-defined classes, just as plants, animals or the elements are; and by thoroughly mastering the distinguishing characteristics of occlusion and of the facial lines peculiar to each class the diagnosis of any given case is greatly simplified. At the same time, familiarity with the possibilities of tooth movement and the changes requisite to each distinct and separate class, to attain harmony in occlusion and in the facial lines, and a knowledge of the standard appliances designed for each established class as best suited to produce these changes, will reduce the difficulties of treatment to the minimum."

He classifies an individual tooth as subject to seven malpositions —"A tooth outside the line of occlusion may be said to be in buccal or labial occlusion; when inside this line, in lingual occlusion; or if farther forward mesially than normal, in mesial occlusion; if in the opposite direction, in distal occlusion; if turned on its axis, in torso occlusion. Teeth not sufficiently elevated in their sockets would be in infra occlusion, and those that occupy positions of too great elevation would be in supra occlusion. These different malpositions in their modifications and combinations form the basis for limitless variations of occlusion from the normal, from the simplest to the most complex, in which may be involved not only the malpositions of all the teeth, but even the relations of the jaws, resulting in marked deformities, and producing appearances even repulsive."

In considering the treatment we are departing from malocclusion to orthodontia, but it is a fascinating subject. One must devote his entire time and energy to this work to meet with a great measure of success, yet it is possible for anyone to do a considerable amount of good practical treatment in the cases that are so frequently met with. One dentist has said: "The best way to treat a case of irregularity is to send it to some other dentist." That is true only when the case is so complicated that one is not sure of his ground; it should then be sent to a specialist. Do not tell the patient that regulating work is impracticable or advise that the tooth be left

alone for nature to take care of. If a tooth is extracted to gain space, be absolutely sure that you are not injuring future possibilities of treatment. Many reasons have been given for the hesitancy of dentists to take up this work, such as, "I have not the time." "I cannot afford to do work which offers such small remuneration." "It is not a practical work—you break down the patient's nervous system by causing him months of torture, and then the teeth all go back again."

The first reason is valid only for dentists living in the largest cities, whose efforts are expended in other lines of professional work. The duty of such a practitioner is fulfilled by explaining to the patient the gravity of oral deformities, the necessity for immediate treatment, and referring the case to a specialist. The dentist living in a small place, however, has a great duty presented, and his advice and work are potent factors in teaching the public the value of teeth perfect in occlusion. With correct methods of treatment the time spent can be reduced to a minimum. The plea of insufficient remuneration is not logical. There are many patients who do not consider their teeth worth filling and who would naturally pay little attention to an irregularity. Such people need educating and it is our duty to instruct them. If we conscientiously do this, there will be many more parents who will cheerfully provide that their children need not be compelled to pass through life with facial deformities. Furthermore, if regulating appliances are studied and constructed with a correct view of the requirements presented, the time saved by the dentist will enable him to make the work as profitable as any other line. Discard rubber plates. Investigate the power and great adaptability of the forces contained in the jack-screw attached to fixed bands on the teeth. Become acquainted with the wonderful possibilities in utilizing reciprocal force, and the work will be found both fascinating and profitable.

Discussion. *Dr. T. W. Brophy*, Chicago: This subject has been sadly neglected. Many mouths show beautifully filled teeth but deplorable malocclusion. Unfortunately many dentists believe that they should do just what the patient asks and nothing more nor different. This is most unwise, as the dentist should be the judge in all such matters. Malocclusion may be corrected very easily if taken in time, and the old adage—a stitch in time saves nine—is peculiarly applicable here.

Dr. R. Maercklein, Milwaukee: Most acquired irregularities are produced by the injudicious extraction of teeth, especially the second deciduous and the first permanent molar.

Dr. G. V. I. Brown, Milwaukee: I recollect a case in which the difficulty with the peridental membrane, which showed itself in looseness and loss of the tooth, has been temporarily arrested by correcting the occlusion. There was another case in which four incisors were being moved considerably out of the arch by malocclusion. Ordinarily it would not be termed such, but it was brought about by reason of some nervous disturbance or some irritation of the brain which showed itself in the habit the patient had of bringing the teeth together in moments of unconsciousness, either sleep or subconsciousness, or when absorbed in thought. Many people are thus affected, and not only we as dentists recognize such conditions, but neurologists and general practitioners will pay more attention to them in the future.

A PROFESSIONAL OPPORTUNITY.

By C. E. Bentley, D.D.S., Chicago. Read Before the Wisconsin State Dental Society, at Madison, July 18–20, 1899.

Only forty years back the good fellowship, the cordial exchange of ideas and methods, which mark such an event as this meeting, did not exist. Then each man's workroom was barred against his brother. Methods of practice were jealously guarded and small prejudices and selfishness arrested the development of a profession whose growth held unlimited possibilities. The organization of dental societies was the key to this locked door of individual isolation, and it has revolutionized the condition of the dental profession.

Bacon says: "The real use of all knowledge is that we should dedicate the reason which was given us by God for the use and advantage of man." These words are especially applicable to the professions. In proportion to the wider use of a profession—its general application—is it worthy of the esteem of mankind. The knowledge necessary to a fully qualified professional man is enhanced when it is applied to civic usefulness and needs. In short, a profession that contributes to the common weal, to philanthropy, stands higher in the public estimation for such service. Medicine has done much in this line that rightly entitles it to the high place it holds in the public's regard. Law and the clergy each manifest a keen

interest in the government of civic affairs and contribute their share to the well-being of society. These professions having histories replete with many achievements; a literature illumined by centuries of research; and a zealous following of devotees who are keenly alive to the legacies of the past and eager for what the future may reveal, have won their places in the public's favor as much for their interest in the common weal as for their technical achievements.

We pity the soul so dwarfed and self-centered that it has no time or thought to give its fellow man. The loss is to the former, not the latter. As it is with men so it is with classes of men or nations. A class or nation has reached a high degree of organization and usefulness when it can throw off from itself like planets from a central sun, independent forms of organization created for the benefit of society; and this condition has been reached by many nations and a few professions.

What are we doing as a profession to meet the high estimate of our calling along these lines? What organized movements, having for their object the benefit of the civic health, sanitation, hygiene or enlightenment, have emanated from us? If the test for a profession's widespread usefulness is as above indicated, then how does our own measure up to the conception? Have we not ignored many opportunities, the fulfillment of which would have added much to the warrant for our claims upon the public esteem? In proportion as we engraft our professional selves upon the civic life, working from disinterested motives and contributing to the public weal, in just so far will we rise in the estimation of the people as regards professional worth.

The question then naturally arises, what can we do as a class to enhance the good name of our profession? As is well known, many stigmata that we attempt to correct or assuage in adult life might have been avoided had the patient known a remedy, or better, had he or she fallen into the hands of a competent advisor before the permanent sequellæ had fixed themselves. This is made possible only by our opportunity to see these conditions in their incipiency. Dentists do not have such chance with the vast majority of children, and at the present rate of progress in this direction it will be many moons before such will obtain.

What machinery can we set in motion that will at once obviate the conditions referred to above and enhance our professional worth

in the public mind? It seems to me that our usefulness would be greatly increased if it were possible for competent dentists, recognized by school authorities, to be delegated to examine the mouths of children in the public schools and teach them regarding the hygiene of the oral cavity and also how to avoid the many pit-falls familiar to us all, which are often only the price of ignorance, or worse, of willful neglect. Such a plan is feasible, for already a similar movement has received the serious thought of men in other countries. In Berlin this system obtains, and the results are more than were looked for by its most sanguine promotors. In Toronto, Canada, no child can enter the public schools who does not present a certificate to the effect that its teeth have been examined by a dentist. California and St. Louis are wide awake on this subject and are slowly paving the way for its consummation. Chicago has gone at the work in a systematic way. The Odontographic Society has sent a circular letter to the boards of education in all civilized countries in cities of 100,000 and over, inquiring about their attitude concerning such a movement and gathering data upon the subject. The letter has stimulated the movement in nearly all places to which it has been sent, and I should not be surprised, when all the facts become known, if a general awakening as to its importance would be the result both with school authorities and the dental profession.

What are the possibilities of such a plan in full operation? Under proper regulations it would be of inestimable worth to the children. The impress upon the child's mind, while yet in its plastic state, of the importance of the care of the teeth would be lasting. Teaching of the best methods regarding oral hygiene and the multitude of useful facts pertaining thereto is valuable.

Again, the profession of dentistry would become one of the civic functions, and would receive some official recognition of its status of professional service as a factor of usefulness in maintaining the public health. The data collected from these examinations would be of untold worth to investigators. The profession would be brought closer to the community by reason of its connection with the school system. It possibly might result in a dentist's employment by the school authorities to especially teach his particular subject, instead of having it taught indifferently as now by the teachers of physiology.

These are some of its possibilities and benefits. This is simply a statement of the proposition. The details of such a plan would have to be elaborated by individuals most interested and according to the conditions where it would be introduced. It is sufficient to say here that considerable caution would of necessity have to be exercised in the selection of such men, and I think their appointment should come through the recommendation of dental societies. The abuse of any of its privileges could be dealt with as is the abuse of any privileges over which the school authorities have control.

With such conclusion I therefore make an appeal to you, as an organization, to consider this question seriously and organize that you may do some effective work along this line.

Discussion. *Dr. B. C. Campbell*, Lake Geneva: Every man who holds a degree owes a duty to the community in which he resides, and no one has a better opportunity to benefit mankind than the dentist. Let us begin with the children, whose minds are receptive. The opportunity presents in private practice, but more especially in the public schools. This agitation should properly emanate from the state society, as there can then be no suspicion of self-aggrandizement.

SOME OF THE PRINCIPAL CAUSES OF FAILURE IN REGULATING.

By S. H. Guilford, D.D.S., Philadelphia. Read Before the Northeastern Dental Association, at Holyoke, Mass., Oct. 17–19, 1899.

We may teach how to perform operations of any given character and thus impart valuable instruction, but it is quite as important to show where and how failures may occur; for we often learn more from them than from our successes. In speaking of failures I do not necessarily mean total ones, but rather failure to accomplish all that either the patient or operator hoped to accomplish. Absolute and mortifying failures seldom occur, because even moderately intelligent effort will usually leave the patient in a somewhat better condition than if no treatment had been attempted.

Many failures occur through lack of accurate knowledge of the parts to be operated upon, their anatomical character and physiological peculiarities. The teeth are regarded simply as objects whose positions it is desired to change; and force of some character

is applied in some manner, with the hope that if the force is great enough and is applied sufficiently long the desired result will be accomplished. The attendant and modifying conditions of age, health, sex and family type are overlooked, and the great mechanical and physiological feature—improvement of occlusion—is lost sight of. When a patient presents search is made through the different works on Orthodontia for a case similar to the one in hand, and the illustrated appliances are reproduced and applied with the feeling that success will surely follow. If disappointment should result a new search is made for another appliance, and hope is revived. It is the "hit or miss" method, and when by it satisfactory results are obtained, they are certainly due more to good luck than good management.

Again, failure may and often does occur through the employment of improper methods, or such as are not suited to the case. Differences of opinion may prevail as to what constitute proper and improper methods, but we think no one will dispute the statement that removable appliances have had their day and often defeat the objects of their employment. If such appliance be difficult to remove the patient may not remove it, or, once removed, may not be able to replace it. If easy to remove the chances are greatly in favor of its being removed too frequently and left off for too long periods. A stationary appliance which withal will not interfere with a satisfactory cleansing of the teeth, will be much more satisfactory to both patient and operator and far more likely to accomplish the results sought after.

Another form of appliance which I would class under the head of improper, or at least undesirable, is one in which ligatures are employed to any considerable extent. Ligatures, it is true, are sometimes necessary as accessories, but they should be employed only for minor or subordinate parts of the operation. The extensive use of them is open to several objections: they exert but little force; are tedious to apply; are very liable to become displaced, or to slip up and irritate the gum; they interfere with the cleansing of the teeth, and require long sittings for their adjustment and removal. In addition to these I might add, that in their use the patient cannot render any aid in the operation, as he could where screws are employed. The displacement of ligatures, when the patient resides at a distance, is a very distressing mishap; and when it occurs fre-

quently is most likely to discourage the patient and may result in the abandonment of the case. Instances of this character have occurred so frequently that those who make a specialty of regulating have abandoned the extensive use of ligatures and are employing in their stead appliances that are more stable and controllable. Again, all appliances which cause great pain, either by irritation of the soft tissues or too rapid movement of the teeth, should be avoided. Uncontrolled force, as exhibited in some forms of springs or elastic plates, is a very dangerous agent to employ and may result in positive harm—a thing more to be dreaded than simple failure.

Unwise extraction of teeth is often a precursor of failure. By it many unskilled operators have not only assured their own failure, but rendered almost impossible the success of their more skillful successors. Probably no one thing preliminary to the immediate work of regulating has a greater bearing upon the success or failure of the operation than extraction. Wisely done, after most careful consideration of all present or future possibilities, it may be the one thing that will contribute most largely to success; but unwisely performed or not being resorted to when it should have been, it may result in irremediable failure.

Where certain teeth erupt abnormally, or are crowded out of their proper positions and room is lacking for them in the arch, two methods are open for providing the required space. We can either extract one or more less important teeth or expand the arch. Sometimes one plan is best, sometimes the other; but to do either where the other is indicated will be followed by disastrous results.

Another fruitful cause of failure is insufficient or insecure anchorage. In applying force within the mouth we need a point of resistance or anchorage from which to exert the force which we intend to apply for removing irregular teeth into their proper positions. If this anchorage be insufficient it will be moved in response to the force which the appliance necessarily exerts equally in opposite directions. To prevent a disturbance of our anchorage we must make it as secure as possible by temporarily binding or joining several teeth for the purpose. In all cases the anchorage should be capable of resisting many times the amount of stress which it will be called upon to bear, for if the anchorage should prove unstable we not only invite failure but produce a condition which in itself will be most unfortunate. The most common cause of the disturbance

of the anchorage is the attempt to move too many teeth at one time. Where the anterior superior teeth protrude excessively and lateral expansion is contraindicated, it is common practice to extract a tooth on either side of the arch (usually the first bicuspid), so as to permit the six anterior teeth to be moved backward. All the teeth that can then be used as anchorage under the most favorable circumstances are the remaining bicuspid and two molars on either side. If now the attempt be made to retract the six anterior teeth at once, depending upon the six posterior ones to furnish the resistance, the result will often be that the anchor teeth move forward instead of the anterior ones backward.

Such a disaster may easily be avoided by dividing the burden of work and moving only part of the teeth at a time. If the cuspids are first forced backward as far as required and held there, all the available pressure can then be brought to bear upon the incisors and they will probably yield to it without any disturbance of the anchorage . When through any mishap the anchor teeth become loosened and move from their positions, the only recourse left is to obtain resistance from the dome of the head by means of the skull-cap and its accessories. In fact such great resistance can be obtained in this way that it is generally better to resort to it in the first instance.

Still another cause of failure is the inordinate lengthening out of operations in regulating. Too rapid movement of teeth is apt to be not only painful but may result in harm; but the slow dragging along of any operation often produces discouragement in the patient and tempts him to abandon the case altogether. The operation may be safely hastened in many cases by having two movements going on at the same time, either in the same jaw or in both, where they do not in any manner interfere with one another and where they are not likely to cause too much tenderness in the teeth.

Occasionally, two simple operations of opposite character may be made compensatory; that is, the same force which is exerted to move certain teeth in one direction is also made to serve in moving other teeth in an opposite one. In the exceptional cases where this principle can be applied it serves an admirable purpose.

But all failures do not occur as a result of the methods or appliances employed. The work may have been skillfully performed, all the desired results obtained, and failure still supervene. I allude, of course, to the failure to retain and permanently secure the

good results accomplished. Proper provision for securing the moved teeth in their new positions until nature has provided for their physiological retention, is quite as important as the act of regulating itself. Many a case has been carried to a successful termination so far as movement was concerned, which later proved an almost utter failure through improper or insufficient retention.

Two points in connection with retention need to be particularly emphasized. First, the appliance used for retaining should be of such a character as to hold the teeth almost immovably in their new positions; second, it should be kept in place until we are certain that the teeth will remain where they have been placed. For many years retaining appliances in the form of plates with certain appendages were almost exclusively employed, nothing better for the purpose having then been devised. They were removable, because they could not otherwise be kept clean, and the cleansing of them and the teeth was regarded as offsetting the disadvantage of having so much material in contact with tooth substance. Time, however, proved them to be unsatisfactory. Their removable character placed the wearing of them entirely under control of patient, whose conscience and sense of duty were as yet imperfectly developed. They were removed upon any special occasion and not replaced so soon as they should have been. As a result the teeth were alternately moved and held, so that nature was unable to build up the necessary bony support around them, and after a longer or shorter period the appliance was laid aside and the case regarded as a failure by the parents.

The dentists somehow failed to notice the similarity in process between the osseous union of a fractured bone and the formation of new bony material around a tooth, and lost sight of the fact that as absolute fixedness of the parts is essential to the successful union of a fracture, it must necessarily be quite as important a consideration in connection with tissue formation in the alveoli.

Fortunately new light has come to us. With the advent of the Magill band and its many adaptations we seldom have need of plates or other bulky appliances to serve as retainers, but in their stead employ one or more metallic bands cemented to the teeth, which while occupying too little space to interfere with speech or the proper cleansing of the dental organs, are immovably attached to the teeth and hold them so securely as to favor their becoming

fixed in the shortest possible time. They are to the loose teeth what a splint is to a fractured bone.

The length of time that a retainer should be worn will vary with the number of teeth moved and the bodily vigor of the patient. A less time than six months is never safe, and it may have to be extended to a year or even two years. If the operation has been a simple one, involving but a few teeth, a half year's time may be sufficient to allow for retention, but if great alveolar change has been brought about, as in retraction of all the anterior teeth in upper jaw, the retainer will need to be worn a very long time if we wish to guard against the loss of good results accomplished.

It is always a safe plan to have the retainer in position so long as we consider necessary, and then keep it there a few months longer for greater certainty, for the moved teeth exhibit a wonderful perversity in their attempt to struggle back to their old positions. With an appliance slight in character and not in the way of the tongue it is not difficult to persuade the patient to continue wearing it so long as we wish. Why it should be necessary to wait so long as we have to for the teeth to become fixed, when it requires but six weeks or two months for the firm union of a bone, is difficult to understand, but the fact remains and we have to be governed accordingly.

In conclusion I would say that when the time arrives for the removal of a retainer, it should be left off only a few days before trying it in place again, to see whether or not the teeth have moved. If the appliance goes readily to its old position it may be left off for a week or two and then for a month; and if at the end of that time the teeth show no disposition to return to their old positions, we can feel safe in dismissing the case and considering it a success.

If at any trials force is necessary to get the retainer into position, it should immediately be cemented in place and worn for a few months longer.

Temporary Partial Plate Made in a Few Minutes.—A patient having broken a partial plate carrying the incisors, and having an important engagement within an hour, the deficiency was supplied as follows: Molding a large piece of Gilbert's temporary stopping to the vacant space, suitable teeth were heated and pressed into place in the mouth. With powdered gum tragacanth sprinkled on the under surface of the piece it was worn with perfect comfort and security until the plate was repaired.—*Dr. John Girdwood, Cosmos.*

Digests.

X-RAYS AND ARTIFICIAL TEETH. By Henry Blandy, L.D. S., London. The *British Medical Journal* recounts the death of a woman in Paris from swallowing a portion of her artificial teeth. It states that the X-rays were of no use in locating the position of the plate, on which were two teeth. The editor of the *Record* says: "If the plate were made of vulcanite it would be transparent to the X-rays, and hence could not be localized." X-ray experiments are made at the General Hospital, and to test this statement was, of course, extremely easy. Upon a Landall's Röntgen 10 by 8 inch plate I arranged eleven old vulcanite plates, one of metal, one bit of india-rubber tube, and one elastic band. The red and pink vulcanite plates show as distinctly as the metal one; the black vulcanite less so; but in all cases the teeth are perfectly defined, with their platinum pins. The tube, and even the elastic ring surrounding the leather case, are also plainly visible. I then bandaged one of the plates on the throat of a boy—taking the negative right through the neck, from front to back. The plate of vulcanite appears there distinctly also. The thickness of neck or part is merely a question of length of exposure and development. I write this at once in order that the X-rays may not be discredited by the failure of the Parisian operator; or perhaps the next person who happens to swallow artificial teeth might be given over to cuts in the dark and exploratory incisions, from which X-rays now save many patients in cases of foreign bodies.—*Dental Record, Feb. 1900.*

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GLOVES IN DENTAL SURGERY. By L. D. S. In a recent article the author, in giving his experience of using gloves in aseptic operations, states that he tried those made of silk, taffeta, thread and cotton. In septic cases he uses a nonpermeable one of the rubber type. "Surgical operations from a glove-wearing point of view may be divided into the septic and aseptic classes. In the (1) aseptic cases one may state that gloves are worn to prevent the possible contamination of the field of operation by the hands of the operator, his assistants and nurses; (2) in septic cases to protect their hands from being contaminated by the field of operation."

In dentistry we have been in the habit for a long time of using

either the single rubber fingers, slipped over the fingers of the left hand specially—the fingers which have to handle the field of operation in extracting teeth. But the presentation recently of an unusually diseased condition of the roots of teeth and foul gums led us to adopt the common white kid glove on both hands. Dentists who care to keep their hands soft and clean may rub mutton tallow or vaselin well into the hands, nails and fingers, and sleep with them thus. This very much softens the kid, and nothing can be more cleanly or comfortable than to use kids treated in the same way, where one has to finger discharging abscesses in extractions. The sense of touch is not in the least impaired; the tallow or vaselin enables the operator to enjoy a more delicate manipulation than with rubber gloves, while the precautionary advantage to the operator is at once apparent.—*Dominion Journal, Feb. 1900.*

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GOLD AND TIN IN COMBINATION. Dr. S. B. Palmer, Syracuse, N. Y. In an article on the management of the permanent teeth in childhood, Dr. C. N. Johnson says: "As to the choice between gold and amalgam, this should be governed by two considerations—the one of expense and the one of an adequate endurance on the part of the patient to submit to gold operations without undue nervous strain."

I will briefly mention what was omitted in the paper which gave liberty to an underrating by opposing opinions. That is, the chemical combination of gold and tin in the mouth, long after the work has been done, seems not to be generally understood. Let us first quote Dr. Johnson: "A very useful material for filling these occlusal cavities where the area of the cavity is not too great, is a combination of gold foil and tin foil rolled together. This can be used when the gold operation would be too exhausting, and if properly manipulated it will prove a very satisfactory and often a very permanent operation. With an operator who is familiar with its manipulation it may be inserted so rapidly that it is seldom necessary to apply the rubber-dam, and this of itself is often an important item in the management of children's teeth. It is especially indicated in occlusal cavities of upper molars and bicuspids, the lower molars ordinarily calling for fillings too great in area to make this material serviceable. It cannot be depended upon to wear well in cavities with a broad masticating surface."

For more than a score of years I have made a study of this combination, and my experience is much more favorable than the above claims indicate. The mention that the lower molars ordinarily call for fillings too great in area to make this material serviceable indicates that the chemical action which follows the combination of gold and tin was not considered. There are two phases to be considered in this combination, which are, first, when gold and tin foil are packed into a cavity with good walls and the operation is done as thoroughly as would be with gold, such fillings are perfectly fitting and tooth-preserving. Aside from the ease of manipulation, by which perfect adaptations are secured, they are not so durable as gold, because there is no cohesion and the plug is worn away by layers. Consequently fillings of large areas, as stated, are soon worn away. The other phase consists in forming an alloy of the two metals. By electrolytic action induced by the fluids of the mouth there is an interchange of atoms. By mutual induction the gold and tin unite, forming an alloy resembling amalgam in hardness and color and as durable. This principle does not depend upon the size or form of cavity other than to retain the plug while undergoing the change mentioned. Thus it will be seen that dryness is essential only in maintaining the plug during the chemical process which fixes it. The advantages in the use of this filling over any other (except where amalgam would be objectionable) are obvious. It is soft, by which with coarsely serrated pluggers sufficient mechanical adhesion may be obtained to do contour work. Being pliable, the filling may be brought in close contact with the walls of the cavity. As the hardening depends upon moisture the rubber-dam is not necessary.

The laws which govern the union of gold and tin seem not to be generally understood, which has led to many failures. As previously stated, gold and tin when in contact in the mouth become united, that is, the mere surfaces interchange atoms and a perfect joint or contact is made by an alloy of the two metals. This alloy does not extend into either metal beyond the thickness of one or two layers of foil. It is difficult to roll the foils so as to have the metals evenly distributed. The result is, where an excess of tin comes to the surface in a filling that portion becomes worn or dissolved out, leaving a pit. An excess of gold remains bright and does no harm except when the gold is folded upon itself noncohe-

sively. In that case there would be a weak point with no cohesion. This would do no harm in the body of the plug. This principle should be borne in mind when gold and tin are used for guard fillings at cervical borders under gold fillings. Amalgam serves a good purpose for such fillings, and gold and tin does equally well when the material is introduced in alternate layers, but two or more layers of tin foil used without the gold, except the one in contact with the gold, will be dissolved by galvanic action; that is, if the tin is not used cohesively. Any considerable portion of a filling may be done with tin and no such dissolving occurs. With only a few thicknesses failure may be expected.—*Indiana Journal, Jan. 1900.*

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EXAMINATION OF TEETH OF LEPERS AT MUGURO LEPER HOSPITAL, NEAR TOKIO. By Louis Ottofy, D.D.S., Yokohama, Japan. Following is the number of patients at the present time: Adult males, 20; adult females, 8; children, males, 4; total, 32. The cases are in all stages of advance, the oldest being of six years' standing. I had an opportunity to examine the teeth of eight of these unfortunates, the remainder being too far advanced to justify the risk of personal contact. In the first place I was surprised at the generally sound and hard structures of the teeth of these eight men who ranged in age between twenty-five and forty, notwithstanding the fact that the lack of hygienic care was apparent in every mouth. The small number of teeth lost by extraction was also a noticeable feature. Irregularity of the teeth, which from a mere observation, statistics being wanting, I am of the opinion is characteristic of the Japanese race, was noticeable in six out of the eight cases, and the presence of salivary calculus, which is usual when the teeth are not regular, was, of course, also in greater or lesser quantity present. The condition of the teeth was as follows:

Case	1.	Teeth sound	21;	carious,	7;	extracted,	1;	not erupted,	3
"	2	" "	24	"	8	"	0	" "	0
"	3	" "	20	"	12	"	0	" "	0
"	4	" "	28	"	4	"	0	" "	0
"	5	" "	18	"	9	"	1	" "	4
"	6	" "	23	"	9	"	0	" "	0
"	7	" "	30	"	2	"	0	" "	0
"	8	" "	27	"	4	"	0	" "	1

Summary: Total number of teeth which should be present, 256; sound teeth, 191. Carious teeth: Unfilled cavities, 53; filled cavities, 2; extracted teeth, 2; unerupted teeth, 8.

On examination of the table several facts will be noticed, especially the presence of so large a proportion of the third molars, on an average of only one in each case missing, and as a fact, there are only three men out of eight who have not erupted every tooth. I am of the opinion that no other civilized nation would show the same condition, and I am inclined to the belief that prognathism, which I believe also to be characteristic of the race, may have some bearing on this point, but inasmuch as no reliable data as yet exist, no definite statements are possible.—*Review, Dec. 1899.*

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TRISMUS AS THE RESULT OF ULCERATED TEETH, AND THE USE OF WEDGES. By Paul Voigt, D.D.S., Philadelphia. Trismus as the result of ulcerated teeth occurs very frequently, and the patient becoming alarmed at the disease because of the great distension which takes place around the jaw, accompanied by fever, pain and debility, calls in a physician instead of a dentist to treat the case. The doctor of medicine in eight cases out of ten orders a hot poultice to be applied to the cheek, and in twenty-four hours the patient, instead of being on the road to recovery, presents a pitiful appearance; eye almost closed, every muscle on the affected side of the face drawn out of place, and all the tissues distended as the result of engorgement of all the blood-vessels around the diseased part. The case goes on from one to several weeks, when a free incision is made with knife on the outside for evacuation of pus, an unsightly scar following operation; and then patient is sent to a dentist for extraction of the diseased member.

All this pain, debility, and disfigurement could have been avoided had the case been turned over to a reputable dentist in its first stages, or a dental surgeon called in consultation. When we decide that it is necessary for the patient to have an ulcerated tooth extracted, it should be done at once, even though the face is considerably swollen; an ice-bag or ice-cold water should be applied externally until the swelling is reduced, and with the use of any antiseptic mouth-wash a rapid recovery will usually follow; but where the disease has made considerable progress and trismus has set in, a slightly different treatment is required.

Miss C. Ulcerated lower third molar. The ulceration had been going on for a week; the patient had eaten nothing for several days, and slept very little; the mouth was nearly closed; breath fetid; had been unable to use a mouth-wash. I sharpened several pieces of wood into wedges, placed them between the teeth, and tapped them from time to time with a small mallet. After about half an hour the mouth had opened so that I was able to slip in a lance and cut freely around the abscess. The patient not allowing me to work further at this visit, I ordered a mouth-wash, an application of ice-bags, and made an appointment for the following day. The muscles had relaxed considerably when I saw my patient again, and I was able to wedge the mouth open to such an extent that I could extract the tooth. Continued the use of cold applications and mouth-wash, and recovery was a matter of a very few days.

Miss H. This case had been treated by a physician for three weeks, when during his absence I was called in consultation. Trismus had set in, the teeth being closed within a quarter of an inch; and so much pus had formed that the last physician had used an aspirator to give some relief the day before. The cause of the trouble was a broken-down lower third molar, which had erupted outside the arch. I advised immediate extraction of the tooth. In this case I used wedges which I shaped out of cork, pressing them between the teeth with my fingers, and changing from smaller to larger ones, until in an hour I had the mouth opened so that I could use my forceps fairly well. I found, however, that it was necessary to extract the second before I could extract the third molar. An ice-bag was ordered to be applied externally, mouth-washes used, and a rapid recovery followed. When the physician who had been treating the last case returned he was dumfounded to find that I had been able to extract the teeth; he had during his treatment made several attempts to reduce the distension by lancing the gums, and it was his intention to freely open the parts on the jaw the following day; so the patient, who was a young lady, was saved by the timely extraction through the process of wedging, from a very unsightly scar.—*Cosmos, Jan. 1900.*

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ADJUSTMENT OF THE RUBBER-DAM. By E. K. Wedelstaedt, St. Paul. Now we are dealing with a mesio-occlusal cavity in an upper first molar. The patient has not lost any teeth on that

side of his head. The tooth is ready to be operated on. Space between the molar and bicuspid has been previously obtained. Examination reveals that there will be some trouble in adjusting the rubber-dam, as the contact points between the bicuspids and the bicuspid and cuspid are large and a trifle irregular. As gold will be the filling material it will be necessary to remove the clamp during part of the process of finishing the filling. Before the rubber dam is obtained I will place on my bracket two pieces of Irish linen thread (No. 25) eighteen inches long. Besides these the clamp forceps, No. 51 rubber-dam clamp, some thread bands (No. 16 Faber), and a piece of pointed soap. In the middle of one of the pieces of thread I will securely tie a small ball of cotton. A piece of rubber-dam about six inches square will then be obtained. At a point about three inches from one side by an inch and a half from the top, I will punch one large hole. The punch will be withdrawn and the punch plate changed to the second largest hole in the punch, and that sized hole will be used for making the remaining openings in the dam. Three-sixteenths of an inch from the first hole punched I will put the next hole, and I will continue to punch holes until there are six in all, about three-sixteenths of an inch apart. The holes will then be soaped and the dam adjusted. The thread with the cotton attached will be placed around the molar. The cotton will be drawn part way into the disto-linguo-gingival space. It will not be forced in this space, but the thread is drawn taut, so that there may be little likelihood of the dam slipping past it. A clamp will then be placed on the molar. Then the bicuspid will have a ligature placed around it. For an anchorage of the dam, between the central incisors a short piece of thread band will be used, which will be left there until the operation is completed. Ligatures will not be placed around any teeth but the two mentioned and the saliva will not creep in. Some care, however, must be used, and a rubber band will be passed between each of the teeth from the central incisor to the second bicuspid. This will be done merely as a precautionary measure, to be certain that the dam is past the contact of the teeth. A piece of rubber band will not be left between each of these teeth, as it is not necessary. When the rubber-dam has been adjusted by this method the crowns of six teeth will be exposed to view. When the clamp has been placed on the molar the dam is held so far out of the way as not to prove an obstruction at any

phase of the operation. There will be abundance of light also, and it will not be interfered with, as is the case when the crowns of but two teeth are exposed. I have been using this method for the past ten or fifteen years, and I cannot speak too highly of the many advantages in its favor.

Tying the thread around a small ball of cotton, as has been suggested, may not be anything new. My use of it dates back a number of years, and it came about in this way: I had been in the habit of making a series of knots on the thread and trusting to them to hold the rubber-dam in place. I adjusted the rubber-dam to an upper molar where I did not wish to use a clamp, and found the knots on the thread were not large enough to prevent the dam from being forced from the tooth, so another ligature was taken and a ball of cotton attached thereto. This held the dam in position and no further trouble ensued.

I believe there are 90 per cent more ligatures used by dentists generally than are necessary. In the majority of cases where the rubber-dam is so adjusted that the crowns of three or four teeth are exposed, if, instead of tying ligatures around each tooth, a small ball of cotton or a piece of spunk is crowded into the interdental space, the ingress of moisture is prevented.—*Ohio Journal.*

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PHYSIOLOGICAL REASONS FOR SUPPOSING THAT DENTIN AND ENAMEL IN PULPLESS TEETH MAY BE NOURISHED. By Joseph Head, M.D., D.D.S., Philadelphia. Read before National Dental Association, August 1, 1899. The case is that of a young lady whose slightest systemic derangement was often followed by obstinate pulp-congestion. On March 30, 1897, she came to me with such congestion in the pulp of the left upper first permanent molar as made it necessary to remove the pulp. Bleeding and arsenical applications were uselessly tried; cataphoresis was found unavailing against such tissue, and finally cocain was injected and the pulp thoroughly removed up to the tip of each root by means of a nerve-broach. The canals were filled with oxychlorid of zinc June 6, three months and six days after the trouble began; but in the meantime the first and second upper bicuspids on the same side gave such trouble that their pulps had also to be removed. Thus by June 15 the pulps of the left upper first permanent molar and left upper first and second bicuspids had been re-

moved, and all the canals were filled with oxychlorid of zinc. The patient was then dismissed.

In the following December she returned with a congested pulp in the left lower third molar, and in the light of past experience the tooth was extracted. The relief was, however, but temporary, and on the following day she again returned, declaring that hot and cold water gave her unbearable pain. I examined all of the teeth containing living pulps, and as none responded to the tests I finally in desperation began to test all of the teeth, and with most startling results. For when a hot instrument was placed against the molar from which I had extracted the pulp six months previously the pain was intense. The pulpless first and second bicuspids also responded, but to a less degree. On opening the first permanent molar I found that the oxychlorid of zinc filling had become liquefied, and that the entire dentin had taken on such inflammation that it could not be touched without causing the patient to turn pale. In the bicuspids the oxychlorid of zinc was hard and normal.

In previous years I had noted cases where dentin was sensitive in spots after a pulp had been newly extracted, and I attributed this sensibility to possible prolongations of the protoplasmic material of the cementum, but in the case just quoted sensibility of the dentin was general, and the pain was quite as intense as if a live pulp had been distributing nerve-tissue and nourishment. All three teeth were reopened thoroughly, and daily applications of chlorid of zinc were made until the sensibility was brought under control, when they were again filled. Six months later the teeth were still sensitive to heat and cold, but up to the present time the sensibility has steadily diminished and the patient has finally had entire relief. One fact concerning this report should be especially emphasized. The pulp was removed from a molar May 22, 1897, and for over one year and a half the dentin remained sensitive and presumably alive. Thus by a sort of human vivisection we have conclusive proof that dentin has means of sensitory communication and avenues of nourishment independent of the pulp.

Are these phenomena incapable of being satisfactorily explained by facts already well known? Let us see. The ultimate nutrition of all the cells in the body is performed by osmosis of the liquor sanguinis, which weeps through the thin walls of the capillaries. The tooth has two avenues of nourishment, the pulp and the

cementum. The pulp opens primarily into the dentinal tubules, but beyond the dentinal tubules the liquor sanguinis in nourishing the tooth substance must permeate by osmosis pure and simple. The cementum communicates with the intertubular spaces and dentinal tubules of the dentin by means of its lacunæ, and osmosis can take place through it to all parts of the tooth, just as osmosis from the pulp occurs; while the avenues in the cementum not being so large as those of the pulp, the process must be slower and less effective. Thus the apparent puzzle seems to be solved. There being but two means of blood-supply, namely, the pulp and the cementum, each using the process of osmosis for ultimate nourishment, it is clear that if the pulp be destroyed the cementum must undertake the work formerly performed by both; and that it does do this seems to be emphasized by the fact that the cementum tends to exostosis and thickening when the pulp is gone, as though making preparation for extra effort.

If it be said in refutation that nerve communication between the dentin and the cementum has never been found by the microscope, it may be answered that the microscope has probably not yet found the half of what it is destined to find, and that it is far easier to believe that the microscope has overlooked minute sensitory plasma than to believe that sensitory impulses between the dentin and gum are carried on by a system kindred to the Marconi system. And furthermore, since the dentin can be nourished by a process similar to osmosis, why cannot the enamel be nourished in a similar way? Why should not the phosphate of calcium or some kindred salt percolating through the tooth gradually modify the density of the enamel-rods or their sheaths? My daily excavations tell me unmistakably that the enamel of five years is less hard than the enamel of forty years; my daily observations make me feel that the enamel grows harder in course of years long after the enamel-organ has been destroyed. But whether this hardening is done, as I think, by a further calcification of the rod sheaths, or whether the hardening is due to a change entirely within the enamel molecule, just as the carbon of coal is the same as the carbon of the diamond, I do not presume to affirm.

I know only that since pulpless dentin has been observed to live and have sensation for over a year, such dentin must have nerve supply and nourishment independent of the pulp. And if nutrition

is possible to the dentin by osmosis through the cementum lacunæ, it is equally possible to the enamel by the same means; and when we consider how frequently enamel is known to change its color from permeation by blood plasma charged with broken-down hemoglobin, not only the possibility but the probability of enamel nutrition by osmosis is forced upon our consideration.—*Cosmos, Oct. 1899.*

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SUPERIOR PROTRUSION. By J. F. Colyer, L.D.S. Eng. Read before the Odontological Society of Great Britain. Many practitioners never begin the treatment of this irregularity until after the second permanent molars have erupted, and that it was the better course was certainly instilled into me during my student days. I cannot, however, agree that the best results are obtained by this method.

In the first place eruption of the cuspids aggravates the protrusion by the pressure which they undoubtedly exert upon the incisors, if allowed to force themselves into position in a full arch. By early interference space is provided for these teeth, and the irregularity to be subsequently dealt with is therefore less pronounced. This point is evidenced in the first case shown, the models representing the mouth before and after eruption of the cuspids. The cuspids have forced the laterals inwards. The next case also demonstrates the action of the cuspids on the anterior teeth in erupting, for in forcing themselves into place they have considerably aggravated the irregularity of the central and lateral incisors.

Mechanical treatment is considerably reduced. If the first premolars are removed before the appearance of the cuspids, the latter teeth will erupt well back towards the second premolars; the pressure on the incisors is thus relieved, with the result that they spread and can easily be retracted. If after the cuspids have fairly erupted a plate is used to open the bite sufficiently to prevent the lower lip passing behind the upper incisors, the natural pressure of the upper lip will considerably reduce the prominence of the upper teeth. The plate must of course be made free from the palatal aspect of the incisors. On the other hand, if treatment is delayed until after the eruption of the cuspids, mechanical means must be employed to draw these teeth back, which at times is difficult; the alveoli too will have become more developed and the retraction of the incisors will therefore be more difficult.

It will thus be seen that by early interference a great diminution of mechanical treatment can be effected, and the extreme importance of this is evident when we consider all the troubles attendant upon the use of mechanical appliances in the mouth, one of the most important of which is the disorganization of the bite. In early treatment this condition does not arise. These, then, are the advantages of early interference. It need hardly be mentioned that it is a *sine qua non* that the first permanent molars must be saveable teeth.

The next models are from a patient aged 10 years, who had marked protrusion of the incisors. The first premolars were removed directly the cuspids showed indications of erupting. The case was then left entirely alone until the cuspids had fully erupted, when the incisors were then brought in. A glance at the next models shows the amount of protrusion which was overcome simply by extraction only. A third case treated on somewhat similar lines is also shown, only here a plate was inserted to hold back the second deciduous molars, and when it was seen that the tendency for these teeth to advance had been overcome, the plate was cut free from the palatal surface of the incisors, the bite being opened so as to prevent the lower lip passing behind the upper incisor teeth.

Another point is the treatment of that class of protrusion where the lower incisors press behind the cingula of the upper ones. In these cases the lower incisors are generally arranged in a fan-shaped manner. It appears to me that if we can obtain a correct knowledge of the cause of this arrangement we shall be better able to adopt a more correct and rational line of treatment. To what is this uprising of the lower incisors due? In the majority of cases it can be traced to crowding in the anterior part of the mandible. The cuspids normally lie in a plane slightly anterior to the lateral incisors, and even in the normal condition the fan-shaped arrangement is slightly marked. When there is lack of space the cuspids encroach still more upon the roots of the laterals and force them in an inward and fan-shaped manner. If, then, this fan-shaped arrangement and abnormal uprising of the lower incisors is the result of pressure due to crowding, surely the most rational way to relieve is by extraction. If this is done the incisors will fall down to their normal level, and still further the arch will be slightly reduced in size—in other words, the most difficult stage in the treat-

ment of these cases will be easily overcome. This method I have latterly adopted in treatment, and the results will come up to my expectations.

I do not for one minute contend that in all cases where the lower incisors impinge behind the upper ones the primary cause lies in a crowded arrangement of these teeth. In a certain section of cases the impingement of the lower incisors behind the cingula of the upper incisors is accompanied by a want of development of the molar region. In such cases the usual, or rather orthodox treatment is to attempt to raise the bite by inducing the molars to rise in their sockets, and then to carry out the retraction of the anterior teeth. Such treatment, although it sometimes yields at the time fair results, does not seem to be permanent, and my experience has tended to make me doubt if it can be considered at all reliable. In two cases I have under observation the bites were raised, the teeth retracted, and at the time satisfactory results were obtained, the lower incisors being freed from contact with the upper teeth. In both cases a relapse has taken place, due, so far as I can determine, to the molar teeth being again forced down into their sockets. It therefore seems possible that the treatment is at fault, inasmuch as it does not remove the real cause of trouble that I believe is the true explanation. We are too much inclined to place the cause with the molars themselves, forgetting all the while that the depth of the molar and premolar region is in direct relation to the ascending ramus. For our treatment therefore to be rational we must direct our measures to the ascending ramus, and the solution would be to increase the length of that portion of the mandible, which at any rate with our present knowledge is impossible. So long therefore as we have the real cause of the short molar region, so long must we be prepared for our cases to relapse. I think that a much more effective method of removing the obstruction of the lower incisors is to shorten them by grinding down from their cutting edges, a method of course by no means new. The points argued against such treatment are: (1) it renders the teeth liable to caries and to pulp trouble; (2) the incisors again rise up and impinge on the upper teeth.

With regard to the first point, the liability to predispose to caries is so remote that it may be disregarded, while the pulp trouble can be easily avoided by carrying out the operation by easy stages, and

applying appropriate drugs to the exposed dentinal surfaces. With regard to the second point, the fresh uprising is not likely to occur in cases where the lateral pressure of the cuspids has been removed.

There is just one other point, namely, the tendency for cases of superior protrusion, when treated, to relapse. I am inclined to think that, providing the action of such causes as the lower lip, the lower incisors and crowding of the upper cuspids and incisors is overcome, the case will not relapse if a retention plate be worn sufficiently long. The removal of the crowding of the roots as well as the crowns of the teeth is most important, but too frequently overlooked. If the crowding of roots and crowns can be overcome there need be but little fear of relapse occurring, but if the crowding of the crowns alone is overcome, the case will show a distinct tendency to relapse.

The cases shown illustrate this point. In one the crowding of the teeth was marked, the roots of the cuspids lying over the roots of the laterals; the right lateral was also placed in a plane posterior to the right central incisor. The lateral incisors were quite rightly removed, with the result that a good arch was obtained, and the crowding of both roots and crowns of anterior teeth really removed. This case has never shown the slightest tendency to relapse.

The other case was of a somewhat similar type, namely, the laterals were placed in a plane slightly posterior to the cuspid and central incisors. In this instance the first premolars were quite rightly removed and the teeth brought into a good line. The case, even after a lapse of eight years, shows a decided tendency to relapse, and the teeth are kept in their corrected positions only by the use of a retention plate at night. In this case the crowding of the roots of the cuspids and incisor teeth has not been really overcome by the removal of the premolars, although such a step was undoubtedly the correct one. In cases, then, where the crowding of incisors and cuspids cannot be really overcome a tendency to relapse must be anticipated.—*Brit. J. D. S., Dec. 1899.*

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INTERSTITIAL GINGIVITIS DUE TO AUTOINTOXICATION. By Eugene S. Talbot, M.D., D.D.S., Chicago. Every one will agree that successfully to treat a disease the cause should be removed. There are many able practitioners who do not believe in the constitutional nature of interstitial gingivitis. A majority of

the profession do not believe that constitutional treatment is necessary to successful issue. It is with a view of making this position more clear that the present paper is written. I propose to direct attention to the constitutional variety of the disease—interstitial gingivitis of the type due to autointoxication. Every dentist even in practice but a short time has noticed that alveolar processes and gums recede from the necks of the teeth through the entire dental arch, or perchance but one or two teeth are so involved at different localities in the mouth. The alveolar process is hard, and the gums as a rule are healthy, although there may be occasionally a low form of gingivitis and exceptionally a discharge of pus about the necks of the teeth. Despite the infrequency of the pus discharged, the condition has been styled "pyorrhea alveolaris." The patients in whom this condition may be observed are often seemingly healthy. The jaws are well developed, and the number of teeth normal, with broad and short crowns well set in the jaw of the type seemingly least prone to decay. The general appearance of the patient suggests robust health. This condition, while not confined to one sex, most frequently occurs in the male. It is not confined to any period of life, but may occur at any time after puberty.

In dealing with the etiology of this disease, the tissues involved and their physiology first require attention, since here is to be often found the explanation of predisposition to pathologic change. Three great factors require attention. In the first place, in the evolution of the face the jaws have received receding tendencies, anteroposteriorly and laterally. They are much smaller to-day than formerly, and are still decreasing in size. The crowns of the teeth are not so large and the spaces between the roots are gradually diminishing, hence less alveolar process is required. In the second place, it must be remembered that the existence of the alveolar process depends upon the existence of the teeth. When the teeth are lost the processes disappear by absorption. In the third place, senile absorption occurs just as in the bones of the body, but to more marked extent. In the mouth and jaws, therefore, transitory or adventitious structures occur, which are more predisposed to disease than permanent structures. This is why the alveolar process is more subject to changes produced by altered metabolism due to trophic derangement of nutrition than other structures. Hence osteomalacia, or senile absorption, occurs with more rapidity and disastrous-

ness in the alveolar process than in other bones of the body. In other words, a cause which would not influence bone absorption elsewhere would markedly affect the alveolar process.

This process, furthermore, being situated in a cavity which plays an excretory part in an exceedingly moderate degree under normal conditions, would be markedly affected by the strain and influences resultant on excessive strain on other excretory organs. Such a strain would occur from the old condition known as "blood impurity," and for which blood purifiers were taken in the spring ere the days when vegetable food and fresh meat were accessible to the general population. This condition, which was scientifically referred years ago to "rheums" or "humors" (whence the name rheumatism), is now known as autointoxication. This condition, while manifesting itself under different phases as the so-called gouty or uric acid states or rheumatism, is at the bottom, and so far as clinical phenomena and treatment are concerned is but one process. Under existing data the position taken by Rhein and others as to the different clinical aspects of autointoxication cannot be maintained. According to recent investigations by Albu, the autointoxications may be divided into the following classes: Autointoxications from the suppression or disturbance of the functions of an organ,—i. e., autointoxication of thyroid gland, pancreas, liver, suprarenal capsules, producing myxedema, diabetes, acute yellow atrophy, and Addison's disease; autointoxications which occur from anomalies in general metabolism without definite localization, such as rheumatism, gout and oxaluria; autointoxications which are caused by the retension of the physiologic products of metabolism in different organs, such as poisoning due to extensive destruction of the skin by burning, carbolic acid poisoning, uremia and eclampsia; autointoxication due to the overproduction of physiologic and pathologic products of the organism, such as ammonemia, acetonuria, diaceturia, diabetic coma, etc. The most frequent source of this intoxication is the gastro-intestinal tract.

Autointoxication, like all intoxication, comprehends, as W. A. Evans has said: (1) production of the intoxicant; (2) absorption thereof; (3) reaction thereto. These three are embraced when autointoxication is spoken of, which is poisoning of an organism with matter produced by itself. Assimilation or the making of tissue is the passing of the simple into the complex, stability into instability,

with the storing of energy. This instability is a necessity of life. Dissimilation, divided into two divisions, death and energy, the last being a modification of death, is the passing of the complex to the simple, the instable to the stable, with the liberation of energy.

In the building-up process the unused portions of the absorbed foods may produce autointoxication. In the breaking-down process the ash can produce autointoxication. So long as these two processes —tissue-building and tissue-waste—are normal, intoxication can ensue only from faulty action of the destroying organs, of which the liver is the chief, or of the eliminating organ, of which the kidney is a type. This constitutes the first group of those due to faulty elimination. It applies to food remnants and to tissue waste, both normal and pathologic.

The second group is due to errors in cell life. It occurs under three sub-types: (1) by some reason food elements are left unused; (2) the ash from food-burning is usually toxic or unusually difficult to absorb; (3) the secretion of the cells is toxic.

While it may be stated, in accordance with the principles just laid down, that, considered from the direct standpoint of the production in the body there can be no bacteriology of autointoxication, still it must be admitted that autointoxication produces culture mediums in the body which would not otherwise exist, which enhance the virulency of the microbe, and hence increase the toxicity of its ptomaine. Indirectly, therefore, autointoxication must be considered a factor in bacterial action. In dealing with the general question of autointoxication, it should be remembered that when proteids are placed under the action of gastric and pancreatic juice they are changed into a hemi and an anti-group. The anti-group is, as J. A. Wesener points out, broken down into antialbumose and a small quantity of antipeptone. This last is a stable body which does not yield to the digestive juices or even to dilute sulfuric and hydrochloric acids. It is absorbed by the small intestine, but does not replace any waste of the used-up proteids of the body. Antialbumose is changed to serum albumen, and is the one that furnishes the body with its proteid food. The albumose, when injected subcutaneously, causes death; the blood fails to coagulate by reason of the fact that the lime-salts are precipitated by this body. If for any reason the epithelium of the intestine fails to perform its func-

tions of changing this body into serum albumen, toxic symptoms will arise.

While uric acid is charged with being the chief factor in autointoxication, its importance has been overestimated. It is a thermometer of the extent of autointoxication rather than its chief factor. Recent investigations, as J. A. Wesener remarks, show that uric acid represents the metabolism of the nucleins of the body, and is in no way related to the albumens taken in as a food, for these last bodies of this group are very poisonous. The necrosis arises as follows: The leucoctyes break down easily because the carbodioxid remains too long in the tissue spaces; the nucleinic acid liberated in this way attacks the connective tissue, etc., irritates it, and this forms a good basis for destruction of nucleins.

A factor in autointoxication is non-performance of the process of elimination by the various excretory organs. In the urine alone, as Bouchard has shown, there is present each day sufficient toxins in a normal individual to cause death if not excreted. This condition is notoriously increased after prolonged nervous explosions like those of epilepsy or hysteria. This was pointed out thirty years ago by Meynert, who showed that the status epilepticus, or condition of repeated convulsion, was due to the accumulation of a proteid or nitrogenous body in the system. This status epilepticus is preceded by a decreased amount of toxin in the urine and succeeded by an increased amount. The same is true as to the influence of non-elimination from the excretory organs (the bowels, lungs and oral cavity) as well as the non-exercise of its poison-destroying powers by the liver. The non-elimination factor, moreover, interferes with ordinary digestive functions, and hence increases its own extent. The other factor in autointoxication is the production of toxic products in such quantity as to prevent their destruction by organs like the liver and consequent elimination, since a product to be properly eliminated must be reduced to a chemical type. Among the factors which tend to produce both these elements of elimination is the power exercised over the processes of growth and repair by the nervous system. In part this influence is exerted through the control of blood allowance by the vasomotor nervous system, and in part by the direct control of the nervous system over tissue change, which is known as its trophic function. Both these influences are effected by mental and nerve strain.

As Bichat showed decades ago, sudden emotion may produce marked effects upon the secretion of bile and occasion jaundice. Cases are far from infrequent where emotions like jealousy may produce a mimicry of gall-stone colic in neuropathic individuals. Murchison, Christison and Thompson have traced attacks of biliary colic to jealousy. Other liver changes from sudden nervous disturbances, whether of a mental type or not, are not rare. As mental impressions are communicated to the central nervous system purely through mechanical changes in the nerves, such influence must be purely material in operation. As the brain exercises a checking influence on the operations of the liver it is obvious that these mental influences can produce two effects. First, the mental shock might increase the checking action of the central nervous system on the local ganglia of the liver. Second, the mental shock might destroy the checking action on the liver ganglia, and in consequence the liver ganglia go too fast, resulting in their exhaustion. Either of these two conditions would interfere with a poison-destroying action of the liver, and accumulation of waste product would be the result. What is true of the liver is true of the other organs. This is especially noticeable, as Tuke points out, in regard to the kidneys. The action of mental anxiety or suspense in causing a copious discharge of pale fluid is familiar enough to all, especially to the medical student about to present himself for examination, the amount being in a pretty direct ratio to his fear of being plucked. The frequency of micturition may, however, arise from nervous irritability of the bladder without increase or even with diminished secretion. Still the action of the skin is usually checked, the extremities are cold, and the kidneys have to pump off the extra amount of fluid retained in the circulation. There is not elimination of the substances usually separated from the blood, compared, at least, with the aqueous character of the whole secretion. The odor may be effected by the emotions in man as in animals. Prout is of the opinion that mental anxiety will not only produce non-elimination, but also change in the chemical character as indicated by the odor and otherwise. As Claude Bernard long ago showed, disturbances in the medulla produce a markedly pale excessive urine. These disturbances often arise from intellectual strain or emotional shock. The influence of emotional states on secreting processes, and thereby indirectly upon autointoxication states, is illustrated in the fact

long ago pointed out by Tuke, that pleasurable emotions increase the amount of gastric juice secreted, the opposite effects being produced by depressing passions. Beaumont found in a man with a fistulous opening in the stomach that anger or other severe emotions would cause its inner or mucous coat to become morbidly red, dry and irritable, occasioning at the same time a temporary fit of indigestion.

The influence of fear and anxiety on the bowels is as well marked as that upon the bladder and kidneys. Apart from muscular action, defecation may become urgent or occur involuntarily from various causes; the increased secretion from the intestinal canal, as from fear, and in some cases from the altered character of the secretion itself. While in this the influence of fear may be inconvenient in man, it assists escape in some animals, as the polecat.

The emotions powerfully excite, modify, or altogether suspend, as Tuke has shown, the organic functions. This influence is transmitted not only through the vasomotor nerves, but through nerves in close relation to nutrition and secretion. As when the excitement is of peripheral origin, a sensory or afferent nerve excites their function by reflex action, so that when emotion arises it may excite the central nuclei of such afferent nerve, and this stimulus be reflected upon the efferent nerve, or it may act directly through the latter. The pleasurable emotions tend to excite the processes of nutrition, hence the excitement of certain feelings may, if definitely directed, restore healthy action to an affected part. Violent emotions modify nutrition. Various forms of disease originating in perverted or defective nutrition may be caused primarily by emotional disturbance.

As respects secretion the emotions, by causing a larger amount of blood to be transmitted to a gland, increase sensibility and warmth, and stimulate its function or directly excite the process by their influence on nerves supplying the glands. Painful emotions may modify the quality (i. e., the relative proportion of the constituents) of the secretions. Emotions check secretions either by extreme acceleration of blood through a gland by unduly lessening its afflux or by direct influence upon the gland. Although, as a rule, the activity of those glands which bear special relation to an emotion is in a direct ratio to its force, the secretion is checked when the emotion is excessive.

The pleasurable emotions tend to act only in one direction, that of increased activity of the secretions. The painful emotions act both in stimulating and arresting secretion. Thus grief excites the lachrymal and rage the salivary glands. Excess of grief checks the lachrymal and fear the salivary glands, while anxiety suspends the gastric. Extreme fear induces perspiration; fear causing less vascularity and secretion, the secretion of milk is lessened by it. The temperature of the skin is lowered and its secretion checked, although cold sweats may occur. Salivary secretion is arrested, while intestinal secretion is often increased.

The main immediate causes of autointoxication, aside from the factor which sets them in action or predisposes, are, according to Pocheore, diminished alkalinity of the blood, due to acidity of the tissues from overexertion and other causes. Insufficient supply of oxygen, abnormal fermentation process in the intestines, poison from without by bacterial or other agencies, retention of metabolic processes, evidences of these conditions, may often be detected in the urine. The resisting power of the organism depends very largely upon the manner in which the internal or tissue respiration is carried on.

The four great sewers which eliminate the waste products of the body are the kidneys, the skin, the lungs and the bowels. Shut off one of these floodgates, and not only the others but even secretory organs must do the work of the one disabled. One of the greatest eliminators of effete matter is the skin. If from any cause the skin becomes diseased, or after or during eruptive fevers in children, trophic changes and autointoxication are very marked. Pits and grooves upon the teeth, loss of hair, and nail diseases are familiar to every practitioner. Fortunately, these diseases have little or no permanent effect upon the gums, because they are yet in the constructive stages. It is only after one has obtained his growth that autointoxication from the skin lesion, or, indeed, from any cause, makes a grave and marked impression upon the alveolar process. This is peculiarly noticeable in animals. When the other excretory organs are acting badly, the skin and mouth assume their functions. Under massage the skin of the self-poisoned patients has a fecal odor, even when the bowels and kidneys are acting apparently well.

Autointoxication due to imperfect elimination of effete matter from the lungs is a fruitful source of interstitial gingivitis. The

more marked forms are those of tuberculosis, in which there is great debility and in which there is greater waste than repair. Self-poison is continually going on and will continue until death. The chest capacity for the inhalation of pure air is almost *nil*, hence the blood is improperly oxygenated and it soon ceases to convey nutriment to the tissues. Eighty per cent of criminals who die of tuberculosis in prisons have undeveloped chest walls. The degeneracy, therefore, cuts quite a figure in the *rôle* of autointoxication. Degenerates with contracted chest walls are, however, more frequently found. Many undeveloped individuals in every walk of life have tuberculosis. People with undeveloped chest walls and chest capacity may not have tuberculosis and yet suffer from autointoxication. Those who have had pneumonia, and who are thus unable to oxygenate the blood, are subject to this disease.

Asthmatics and hay-fever patients suffer from autointoxication and alveolar absorption. When the skin is overstrained, as to excretion through kidney and bowel overstrain, the lungs are forced to take on increased work with imperfect oxygenation as a result. This is noticed in the odor of the breath in Bright's disease. In nerve-strain states, and in the conditions described by Albu, not only do the excretory organs suffer, but the secretions, like those of the salivary and other buccal glands, are so altered as to become irritants. These excretory conditions result not only upon autointoxication states, but are modified trophic nerve function alteration.

By trophic changes is meant such tissue alterations as occur in morbid conditions from disordered function of the centres controlling nutrition. There may be peripheral as well as central tissues involved. The well-known law of Wallerian degeneration of nerve-fibres is an illustration; the posterior spinal ganglion acting as a trophic centre for the fibres of the posterior root is in the cord itself. The trophic action may be therefore peripheral, though as a rule in extensive changes central (cerebral or spinal) origin should be looked for.

The more marked instances of trophic disturbances are the wasting of limbs in the spinal paralysis of children or adults, and the most striking are perhaps the cases of progressive muscular atrophy of the various types and the peculiar hemiatrophy or hypertrophy of the face and other parts. Besides atrophy or hypertrophy there are included under this head other changes in structure or growth,

such as the necrosis of some "bedsores," those of the hair or nails, etc. These often indicate a general systemic disturbance, but may be more or less local in their origin likewise. In the case of the bedsores the condition is a necrosis due to the mildest kind of traumatism, a simple pressure acting on tissues, the nutrition of which is in a thoroughly depraved condition, and which consequently break down under the slightest provocation. The direct cause is external, but the primary condition is a general one, starting from the great centres, controlling growth and repair of the system.

Trophic changes are not always destructive; they may be the reverse, as already indicated. A general tendency to take on fat may be considered in a wider sense of term to be a trophic affection, but the term is usually limited to the more or less atrophies or hypertrophies, the changes in structure, pigmentation, etc., which follow certain nervous conditions and are spoken of as being under the influence of a special class of nerves, the trophic nerves, which are supposed to govern nutrition. These are known physiologically rather than anatomically; they have not been isolated, and their independent existence is still somewhat in question.

A trophic change allied to that of interstitial gingivitis is the change which takes place in the skin at the finger-tips in the fall of the year. Through the hot weather the effete matter has been carried off through the perspiration, when cool weather returns the skin ceases to act, and the liver, kidneys and bowels must do the work of the skin. Autointoxication results. nutrition is cut off, and the skin of the fingers peels off, leaving the basement membrane layers exposed and tender. The exfoliation of the skin continues until the system has adjusted itself to the new order of things.

As I have elsewhere pointed out, the great neuroses, like locomotor ataxia and paretic dementia, afford instances of trophic disorders directly underlying this factor in interstitial gingivitis. This was lately brought anew to the profession by M. Raoul Beaudet. This malady, of an evolution more or less rapid, is essentially marked by the shaking and falling out of the teeth, by alveolar resorption and gingival ulceration, by the perforation and at times necrosis of the maxillary. M. Beaudet reports seven cases of perforation, three of which came under his personal knowledge. Since then M. Letulle has published a new case. Dr. Chagnon reports the following case: O. G. is 44 years of age. About ten years ago he contracted syphilis,

for which he was treated more or less regularly. Two years later he got married and had healthy children. He did not abuse himself by the use of alcoholic liquors. In June, 1895, he was admitted to St. Jean de Dieu Asylum, suffering from intense maniacal excitement. At the end of two months the excitement disappeared and the physical and psychical symptoms of paretic dementia, until then hidden by his state of excitement, commenced clearly to show themselves—embarrassment of speech, fibrillar twitchings of the tongue, ideas of greatness and wealth, and to crown all, a state of dementia. The disease followed its course without any remarkable incidents until near September, 1897. At this date my attention was called to the state of his dental system. On examination the two incisors, the cuspid, the premolars, and the first molar of the left upper maxillary were found to be very loose and had only to be picked out. All the teeth were absolutely sound. The ulceration following the loss of the teeth, and which affected the surface of the alveoli, did not heal. About the middle of September a sequestrum became detached. As you can see in this, the work of alveolar resorption is not yet much advanced. The palate roof, forming the anterior border of the maxillary sinus, also forms part of the sequestrum, and thus there was a large aperture of communication between the sinus and the buccal cavity. Two months later the ulceration was cicatrized.

Present Condition.—In the inferior jaw all the teeth are sound and there is none wanting. The two premolars and the right cuspid of the upper jaw are decayed, the second and third left molars, as well as the first right molar are loose, but perfectly sound. There exists no alveolar pyorrhea, neither does any trace of ulceration appear, except a small opening which would not admit the probe. It was impossible to inquire into his sensibility owing to the profound state of dementia, which rendered him incapable of understanding the questions put to him. His physical condition is yet good; he is troubled only with weakness of the limbs. The rapid evolution of the affection is noticeable: less than two months after the falling out of the teeth the sequestrum became detached. This would explain the rather slow degree of alveolar resorption. The disease continues its course, since the second and third left molars and the first right molar are loose. Many cases of this type could be cited, but this clearly represents the clinical phenomena.

It will be observed in a general way that disease of any great eliminator of effete matter from the body, the lungs, skin, kidneys and bowels, or any disease of the body which may interfere with the function of waste and repair, will produce autointoxication. Autointoxication produces irritation, inflammation and absorption of the alveolar process. The constitutional variety of interstitial gingivitis is a definite result of trophic and metabolic change in the system. These changes, if not corrected, lead to severe results. These gum disturbances frequently prophesy the future course of autointoxication of which they are the initial symptom.

Many illustrations could be produced to demonstrate interstitial gingivitis due to autointoxication, from casts in my possession representing all diseases, but here is a more forcible illustration than any that could be produced. It is a skull of a monkey, about one year old. He died of tuberculosis. All the temporary teeth except the left central incisor are in place. Absorption of the alveolar process has taken place to such an extent that the central incisor has dropped out. The inferior and superior left cuspids are ready to drop out, and all the other teeth could be removed with the fingers.—*International, Feb. 1900.*

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ASBESTOS AS AN INVESTMENT. By N. H. Keyser, D.D.S., Germantown, Pa. Read before Penna. Assn. of Dental Surgeons, Nov. 1899. For some time past asbestos has been used, alone or in connection with other ingredients, as an investment, either as a protection to porcelain teeth or to hold work in position during soldering. Both the asbestos powder and the so-called woolly asbestos have been used with plaster of paris to reduce shrinkage; the woolly with the idea that its fibres would assist in holding the plaster together when it shrinks and cracks on exposure to intense heat. The powdered asbestos is added to the plaster in place of sand, to produce a light porous investment. The most serious objection to its use is that it retains the moisture long after the plaster has set sufficiently to handle and expose to the heat. Investments that contain plaster are better without asbestos.

When time is no object very good investments can be made by adding to the plaster such materials as bar-sand, silex, marbledust, or pumice-stone. To prevent shrinkage the proportion of all these ingredients should be greater than tne plaster. The best results are

obtained with materials that control shrinkage, make the investment porous, and yet permit the use of sufficient plaster to hold the investment together after it is heated. Investments that will set quickly without shrinkage have been sought for. Several are now on the market which permit of being heated up before the moisture is entirely dried out. A mixture having almost the same properties can be made by the following formula: Potters' clay, 4 parts; plaster, 3 parts; mica, 1 part.

An investment which stands a high heat without change of form has been suggested by R. L. Zellers: Pulv. soapstone, 1 part; plumbago, 3 parts; asbestos, grade 3, 5 parts: plaster of paris, 7 parts. Mix thoroughly and sieve.

Asbestos by itself makes an excellent investment. That known as woolly asbestos or the powdered, when mixed with water or alcohol may be quickly molded as required and the heat can be at once applied. It holds its form thus used, hardening as heat is applied, and with little care replaces fully in many operations the plaster investment, with the advantage of cleanliness and saving of time.

In using this investment it is best to first apply the heat slowly, so as not to disarrange the mass by the too rapid expansion of the contained moisture. Small pieces, such as a tooth upon which we desire to solder a backing, and many of the parts of a crown and bridge denture, may be expeditiously invested by binding around them No. 1 carded asbestos with No. 6 iron wire. The iron wire may be so arranged as to form a handle by which to ho d the work. In this way a tooth can be safely soldered over a Bunsen burner or a spirit lamp without the necessity of waiting for the investment to harden or for any previous heating up. If there is not sufficient heat to melt the solder when held in the Bunsen burner, a blow-pipe can be used after the object is thoroughly heated.

In all plate work the teeth thus invested can be individually soldered and finished before final investment. The investment for holding the teeth to the plate is best made of plaster of paris and good sharp sand. Wildman's formula is: Sand, five parts; plaster, four parts.

By following out the method above suggested all the pins can be soldered, and the backings smoothed and finished conveniently and thoroughly and the final soldering to the plate be very much simplified. The plan also facilitates finishing and gives the plate a far

more perfect appearance with less labor than by any other method. By this simple investment gold fillings are easily fused in artificial teeth, all the work being done in the open flame of a Bunsen burner quite as well as with the more expensive furnaces.

The tooth after the cavity has been prepared is wrapped with the carded asbestos, bound with the iron wire to hold it in place and to form a handle, care being taken to make the investment as thin as possible and to cover up all the tooth except the concavity made to receive the filling. The fibres of asbestos form an air space around the porcelain, protecting it from sudden changes of temperature and from direct contact with the flame. Any of the low fusing enamels can be used, Downie's, Timme's or ground plate glass. The enamel is mixed with water to form a thin, creamy paste, applied to the cavity in the porcelain tooth, and sponge gold is then gently pressed into it. The tooth is then held over the Bunsen burner, heating gradually at first, and is then placed into the hottest part of the flame. If this does not give sufficient heat to fuse the enamel the blow-pipe may be used to concentrate it upon the filling. After a little practice we can readily determine when the enamel is fused. It generally requires a degree of heat just a little less than the melting point of gold. After fusion the gold is condensed and the filling finished in the usual manner.—*Dental Brief, Feb. 1900.*

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TURPENTINE. R. H. Clark, D.D.S., Northampton, Mass. Read before the Massachusetts Dental Society, June, 1899. I do not claim for turpentine that in inflammation it is the most valuable agent, but say it stands without a peer in alleviating certain conditions to be described hereafter. Turpentine is of strong, diffusive odor, hot, pungent taste, non-corrosive, antiseptic, germicidal, preservative, an antiferment and disinfectant, and is practically non-poisonous, because adults have been known to take from four to six ounces without loss of life. Howbeit, overdoses taken internally produce nausea and thirst, a febrile state is induced, muscular strength reduced, coordination impaired, strangury develops, and finally profound insensibility and abolition of all reflex movements ensue. It is obtained from a species of pine, and by distillation the oil is produced. It readily absorbs oxygen, which it retains with great tenacity, hence enhancing its value as a remedy. Its action when applied to skin or mucous surfaces is counterirritant, rubefa-

cient and anodyne. Its physiological action produces heat and redness, followed by vesicular eruption and sometimes ulcerations. The heart's action is increased, arterial tension arises, a general sense of warmth and exhilaration of parts is experienced. It stimulates the vasomotor nervous system, exhausts the irritability of sympathetic ganglia, and stimulates respiration.

As an antiseptic, medical experts are satisfied that it is a product which produces a beneficial physiological action, and many thorough and painstaking investigators, in hospital and private practice. have established its claim to a very prominent place in the field of antiseptics, because in surgical dressings a thorough antisepsis of the wound's discharge is effected.

It is also given internally to combat many distressing and serious diseases, as cholera, disease of lungs, etc. In germicidal properties it ranks second to bichlorid of mercury, and is preferable because of its harmless nature. It prevents fermentation, and in the arts is invaluable on account of its great preserving properties. In dental therapy we find use in the following pathological condition: It counteracts the after-pain of tooth extraction. It is valuable as a root-canal dressing, the penetrating properties of the oil being carried throughout the canals of roots, even to the apices, thoroughly antisepticizing and rendering finally by its irritating nature the incipient abscess (if present) as nil. In periostitic troubles it is no doubt without a parallel, for by its counter-irritating properties that acute inflamed condition becomes quieted. In cases like the above its action is peculiar, according to vitality of the patient. Sometimes it acts as a resolvent, again it hastens (or seems to) ulceration.

In leucoplakia, in scurvy, or those turbulent conditions evolving hypertrophy of the gums, it acts quickly, quietly and likewise very effectively.

In mercurial stomatitis it has no superior. Let me emphasize its use to this pathological condition. In at least half a dozen cases in my practice it has never failed as yet to perform that for which it is intended. In operations for necrosis it acts to relieve that condition of intense pain.

It is an antidote for phosphorus, preventing the formation of phosphoric acid, and converts the substance into an insoluble, spermaceti-like substance. Thus it is indicated in the phosphoric necrotic condition in mouths of those working in match factories. In

all cases it tends to arrest hemorrhagic exudations, fermentation and putrefaction processes, with little pain attending its application.

As a counter-irritant we use it thus: To one part turpentine add one part aconite and two parts iodin. Apply directly to afflicted parts by means of a cotton swab saturated with it. In hypertrophic conditions, remove all irritated surfaces; apply oil of turpentine in such strength as is practicable.—*International, Dec. 1899.*

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ALVEOLOTOMY FOR MISPLACED TEETH. By W. H. Dolamore, Eng. Briefly the operation consists in dividing the alveolus on either side of each tooth which is to be moved, in bending the alveoli so freed with the teeth into the required positions, and in fixing the teeth in their new positions till such time as the divided bone shall have reunited.

First let us consider the union of the bone. This is a very important matter, for if bony union does not and cannot occur, then this operation should be condemned without reservation. But I firmly believe that bony union does follow. Why should the bony structure of the maxillæ form an exception to all other bony structure? That some fractures of the maxillæ do not unite by bone may be granted, but causes preventing union are frequently present, such as movement, interposition of foreign substances, such as the adjacent mucous membranes; and the wound may have and often does become septic. Yet so vascular is this bone, so able to resist septic processes, that I cannot well believe even this to be of frequent occurrence. But when there are clean cut, contiguous surfaces, absolute fixity and asepsis, bony union should and does follow with scarce an exception. Finally, is not the filling up by bone of every tooth socket after removal of the tooth a daily object-lesson of the power of the bone to repair itself when injured?

To insure union the mouth should be aseptic, tartar and septic roots removed, carious teeth filled, and the wound kept aseptic. Yet as Butlin has remarked, "the mouth is a capital sick-chamber." It is only in the mouth that aseptic precautions can be neglected with any hope of escaping an avenging Nemesis. With ordinary precautions septic trouble need not be feared after this operation.

Secondly, the teeth should be absolutely fixed in their new position. I have passed through a varied experience in this matter. In one case the adjoining teeth firmly held the moved tooth in its

new position and I used no splint. In one I used a Hammond splint, in another a wire ligature. For several I used a retaining plate on ordinary lines. One, in which I failed to move the tooth, and one, because the patient would not wear his plate, went without support of any kind. And all, so far as the divided alveolus was concerned, went well. Suffice it now to state that none of these means give absolute fixity of the teeth and bony fragments; and for the last three years I have without exception used a metal splint, struck up over the teeth and fixed in place with cement. The splint is an improvement on the old form of metal splint lined with gutta-percha, which was used for fractured jaws in the prevulcanite days.

Six weeks is about the average period I leave the splint on, but in children a shorter period will suffice. In some one may decide to leave it a further period, or even again to refix it after removal.

The alveolus should be divided through the cancellous structure, which forms the inner portion of the dental septa, as far as the apex of the tooth. A glance at a vertical section through the jaw shows that there is little chance of infringing on the root. This we can prevent at the beginning of the cut, and as the septa widen the more deeply we cut, the less likely it is to happen. In my earlier cases I used a thin circular saw in the engine, but found it impossible to reach deeply enough with the saws of the size usually sold, and when I had some larger made the friction of the saws was so great as to render their use in the engine impossible. The power needed is greater than the foot can conveniently give, bearing in mind that the hand must be steadily held; this is especially so in a cord engine, while in one with a flexible arm the spring buckles up at the least resistance.

I therefore had a couple of saws made which are still my favorites. They are really a modification of Hey's saw, the circular blade being omitted; they are also thinner. In some cases, however, though there may be plenty of room between the necks of the tooth, the cutting edges are in contact or even overlap. For these I use a modified fret saw, which can be threaded between the necks of the teeth and readily fastened and tightened up. In such cases I now gain previous to operation a little space between the teeth by separating with elastic. In a few cases I have also completed the division of the bone with cutting-forceps, but this is better avoided when practicable.

The most difficult part of the operation is undoubtedly the bending of bone and tooth into line. Stress must be laid on the necessity of first making room for the tooth to be bent in or out. For bending out nothing I have yet met with equals Bryan's forceps. For bending in I have so far used large, ordinary straight forceps, and for side movement Physics or similar forceps, the blades of which act approximately as a double wedge. This desideratum, however, is an instrument which shall be worked by a screw, so that the movement shall not exceed that required, and which shall hold the tooth in place while the fixing splint is placed in position.

The first patient I saw at the Dental Hospital in January, 1895. She was 19 years of age. Another member of the staff had regarded her as too old for successful treatment. This represents the average opinion held in reference to such cases, not because the teeth could not be brought into position at this age, but because the patient commonly tires of treatment and ceases to attend.

As this was to be my first attempt at this operation I determined to simplify it so far as possible. To remedy the crowding of the lower front teeth the right central incisor was extracted; this also removed a prominent tooth, which otherwise would have been in the way when the upper misplacement was corrected. Nature, as you see, soon closed up the slight space left. To gain room in the upper jaw the two premolars were removed. Removal of the first premolars would have simplified the case; on the other hand, a space might have been left after treatment which in this position would have been a great disfigurement. The first premolars, then the cuspids, and finally the laterals were drawn back into place by means of a plate which consists of metal caps, struck up over the molar teeth, to which are soldered half-round wires, which pass forward on either side of the tooth to be moved. The points of these wires are bent in and rest on the anterior surface of the tooth. As the tooth moves so the wires are bent. This plate was inserted on February 4, 1895, and the patient attended once a week till July, when the condition shown in the second model had been gained. It may be asked: If so good a result were gained by this plate why not have completed the case in a similar manner? I answer: I find it more easy to draw teeth sideways than directly inward, for even when drawn inward it is difficult to keep them there; indeed, unless a plate be worn for many months the teeth will move forward again.

On July 30, ether having been administered, I made three cuts with a circular saw, and with ordinary straight forceps brought the teeth into line. While so moving them I received my first lesson in the difficulties of the operation; both teeth came out of their sockets to the extent of an eighth of an inch. They were, however, replaced and held in their new position by means of a plate having a wire passing round their anterior surfaces. They soon became fixed in their new position, but a slight discoloration soon showed the pulps to be dead. They were therefore drilled into and the roots filled. This patient will attend to-night for you to see the result. The teeth are absolutely firm and the discoloration still so slight as not to be apparent, and as nothing compared with the previous deformity. I claim for this case that it is a success, but I learned that means must be taken to prevent teeth leaving their sockets. In all my subsequent cases I have prevented this by placing a pad of india-rubber, or of black impression gutta-percha, between the blades of the forceps, and since neither have teeth jumped out, nor in any other case have the pulps died. Dr. Bryan tells me he uses a pad of soft vulcanized rubber.

The next two cases were instructive to me. The first was a waiter in an hotel, aged 21, who had two outstanding cuspids. I brought them into line, operating in the same way as in the preceding case, with good result and a plate was inserted to retain the teeth in position. The following week, however, he attended without his plate, stating that the hotel proprietor had told him either to remove the plate or leave the hotel. The poor fellow had no option but to remove the plate. I am glad to say that the teeth were as firm as could be expected, though they had moved back to somewhat their old position.

The other was a girl of 18, for whom I unsuccessfully tried to move out an upper lateral incisor. From this I learned that ordinary forceps are poor things for this purpose, also that it is essential for ample room to be gained before attempting to move out teeth. The extent to which the gum was indented and contused after the operation made me astonished at the rapidity with which it healed up. After a few weeks we pressed this tooth into line by means of a regulation plate.

In the mouth of a girl aged 20, who attended at the Dental Hospital, I determined for various reasons to extract the cuspids. This

was done, and at a subsequent visit five saw cuts were made, the laterals were forced backwards with cutting forceps, and also brought inwards, as were the centrals, and a retention plate was inserted. This plate was made by a student and was a triumph of mechanical bungling. It would have been wiser to postpone the operation, but I thought it might serve, and to put off a patient who has gone all day without food in view of taking ether, is to run the risk of not seeing her again.

A few days later I saw the patient and found her right central very loose and a considerable quantity of pus coming down the socket. It was obvious that the only hope of saving the tooth lay in fixing it absolutely in one position. I therefore made a metal splint and fixed it on the teeth with cement. The socket was treated with C_uSO_4. The case rapidly improved. A year afterward the teeth were quite firm in their new positions and healthy.

I learned from these first few cases the need (1) of providing against the teeth jumping out; (2) the need of a fixed splint. An ordinary retention plate is often of use in forcing the tooth into position, but it does not give absolute fixidity, it lodges food, etc., has to be removed for cleansing and each removal means jogging the tooth. It is not cleanly and hence against proper asepsis, while the fact that it can be removed places a power in the hands of patients they are better without. (3) Although small circular saws cut well they do not reach far enough for most cases; larger ones are impossible, hence the adoption of hand saws.—*Brit. J. D. S., Feb. 1900.*

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ETIOLOGY OF DENTAL CARIES. By J. Sim. Wallace, M.D., B.Sc., L.D.S. Eng. Hitherto I have taken it for granted that irregularity of the teeth predisposes to caries; I wish now to show *why* it is a predisposing condition. In order to elucidate this point I shall recall to the reader a condition which he may have observed, or if not, which he may easily observe on directing his attention to the subject. When caries starts at the neck of a tooth it will be noticed that it commences at a slight distance from the edge of the gum. The part which exhibits in the early stages the maximum amount of decalcification is removed from the edge of the gum about half a millimetre. Now if the crevice formed by the edge of the gum and the neighboring part of the tooth be filled with food, as it frequently is, it will be observed that the greatest depth of food is

immediately under the gum and not half a millimetre from it. From this it is presumable that the gum exercises an influence antagonistic to the formation of acid. This is further supported by the fact that at almost the same place in certain mouths there is a deposit of tartar. However, the tartar is deposited close to the gum, and in fact, if the formation is not great, at the distance of half a millimetre from the gum there is no deposit of tartar at all. This may be easily seen at the neck of the cuspids, when either of these conditions may be found with almost equal frequency.

The observation of these facts led me to doubt the truth of the current statement that the secretion of the gum was slightly acid. I therefore tested the reaction of the secretion and at first it appeared correct, but on further testing I found that the reaction varied at different parts—that, in fact, round the necks of the teeth the reaction of the secretion after cleansing the mouth was distinctly *alkaline*. This may be verified by molding a piece of wet litmus paper into the crevices at the gingival margin.

No doubt the *rationale* of the slight acidity of the secretion of the gums is to prevent to a certain extent the flourishing of the microorganisms of the mouth, and although the alkalinity at gum margin allows of a rapid development of the microorganisms, the amount and strength of the alkaline solution is in fairly clean mouths sufficient to keep the teeth from destruction by acid produced in fermentation. It will be observed, however, that it would only increase the number and activity of the mouth bacteria if the secretion of the mucous membrane at all parts were alkaline, as these microorganisms grow best in a slightly alkaline medium (K. W. Goadby). I think it will be noticed that this distribution of acidity and alkalinity is the best possible for the prevention of caries. It suggests caution in using alkaline mouth washes.

In the regular arrangement of the teeth the spaces between them are V-shaped, the apex of the V being directed upwards in the case of the lower teeth. The gum bulges into this wedge-shaped space, and so very little of the approximal surfaces of the teeth are more than half a millimetre removed from the gum when it has not receded. Further, it will be observed that the piece of gum filling this space presents a large surface of gum—and so secreting surface—to the approximal surface of the teeth, and we may well be justified in assuming that the antacid or neutralizing action of this is

two or three times as strong as in the case of the cuspid at the spot referred to, especially as the action of the lip is not so near as it is at the buccal side of the neck of the cuspid.

If acid-forming food does lodge in these spaces it must be small in amount, and not only is there the influence of the gum to check the amount of acid formed where certain foods lodge, but there is also the neutralizing action of the saliva, which when mastication is thoroughly performed is constantly rushing through these spaces, and so tending to dislodge any food or acid which may be there. When, however, the arch of teeth is irregular, this V-shaped interspace is nearly obliterated, and the teeth frequently have a relatively long line of contact, or even a surface of contact, extending from the neck of the tooth to near the coronal surface. The beneficial action of the secretions of the gum on the fermenting food, if it lodges in such places, is at a greater distance than in the normal V-shaped spaces, and there is a diminished gum surface to throw out the alkaline secretion. Moreover, irregular teeth often lodge food stuffs more readily than regular teeth. Another effect of irregular teeth is to keep off the tongue and cheeks from the less inwardly or outwardly projecting teeth, and to diminish the amount of cleansing by the friction of the tongue and cheeks and of the movements of the saliva over certain protected parts of the irregular teeth.

While speaking of the influence of the gums in thus being a prominent factor in the prevention of caries, I may refer to the fact that some authors appear to blame the secretions of the gums, not only for being slightly acid, but also for being viscid and a cause of caries. I can at will produce a viscid coating over my teeth by eating sweets, and after having set others to do likewise have found the same coating on their teeth. I see no reason whatever to blame the gums for this condition, especially as cane sugar is known to undergo a viscous or mannitic fermentation. Schützenberger gives the following equation, which will explain what theoretically takes place: $25\ C_{12}H_{22}O_{11}$ (cane sugar) $+ 25\ H_2O$ (water) $= 12\ C_{12}H_{20}O_{10}$ (gum) $+ 24\ C_6H_{14}O_6$ (mannite) $+ 12\ CO_2$ (carb. diox.) $+ 12\ H_2O$.

No doubt this viscous gum acts as a very effective barrier to the beneficent influence of the saliva, and as this fermentation takes place along with lactic acid and other fermentations, and the deposited gum acts as a food-catcher, retainer and acid fermentation protector, we need scarcely wonder that there is a popular impres-

sion that sweets are bad for the teeth. It may here be observed that sugar does not *appear* to be one of the lodgable foodstuffs, and when it is consumed quickly alone, or with fibrous foods, little or no lodging results. But if it be taken in the form of sweets, which gradually melt and are swallowed, and if this be persisted in for some considerable time, there is continuously a little converted into gum by the viscous fermentation. This accumulates so long as the eating of sweets is continued. It is impossible to observe the coating after eating a little sugar when the teeth are originally well cleaned, and in order to get the gummy coating well marked it is necessary to eat sweets more or less continuously for hours. Similarly, when grapes are eaten to a great extent, as in the "grape cure," the same results seem to be brought about by the continuous supply of sugar, and on account of the skins not being chewed, and the presence of the pips encouraging merely the bursting of the grape, practically no chewing is performed, and the resulting effect on the teeth is injurious. So, when infants are given a sucking-bag containing sugar and milk to soothe them, there is rapid destruction of the teeth.

The gummy deposit of the mannitic fermentation does not become formed when cane sugar is taken even in quantity if the fibrous part of the sugar cane is chewed with the sugar, as the juices are swallowed before the mastication is finished, and the fibrous part of the cane cleanses the teeth more effectually than a toothbrush, in the manner I have already pointed out, and further the salivary and other secretions are sufficiently stimulated to be able to carry away the sugar before mannitic or other fermentation has had time to form. On the other hand the viscidity due to mannitic fermentation is seen in an exaggerated degree when salivary secretions are more or less arrested, as in some fevers.

Having shown in what manner the crowding of the teeth very seriously increases the liability to be attacked by caries, I shall now refer briefly to two theories of the causes of crowding of teeth, which have gained currency in our best text-books on dental surgery. I shall first refer to the theory that children may inherit large teeth from one parent while inheriting small jaws from the other. Were this theory true we might equally expect to find teeth set widely apart through the inheritance of small teeth from one parent and large jaws from the other; but we do not. Mr. Tomes has brought

forward evidence which goes a long way to prove that the growth of the body of the jaws is greatly dependent on the developing teeth. On *à priori* grounds we may be justified in going still further by saying that the *size* of the body of the jaw is greatly dependent on the *size* of the crowns of the developing teeth. The growth of the jaws and teeth are intimately associated, and from what has already been said, we may be pretty certain that the jaws and teeth are correllated in their growth. I think we are therefore compelled to dismiss this piecemeal conception of hereditary transmission, just as we would discard any theory of heredity which would have us believe that we might inherit the right leg from one parent and the left from the other.

With regard to the second theory of the causation of crowning, namely, the theory that sexual selection has brought about a diminished size of jaw and a consequent inability for it to afford room for ample dental arches, Mr. Tomes, while admitting that much may be said against the theory, argues as follows: "For if the type of face nowadays considered to be beautiful be investigated, it will be found that the oval, tapering face with a small mouth, etc., does not afford much room for ample dental arches. On the other hand, the type of face which we considered bestial has a powerful jaw development. Perhaps generations after generations seeking refinement in their wives may have unconsciously selected those whose type of face hardly allows the possibility of a regular arrangement of the full number of teeth."

Now on esthetic points there is room for considerable divergence of opinion, and I have no doubt there are many artists who consider a well-developed chin and mental prominence to be a characteristic which is certainly more human than bestial, and that the broad dental arches giving fullness to and preventing the falling in of the cheeks, and consequent prominence of the cheek bones, may help to beautify a face. So, too, full arches of teeth prevent the inane appearance caused by falling in of arch in the cuspid region. Nor is the oral orifice necessarily large when the oral cavity is large; indeed, the oral orifice *appears* somewhat smaller when the arch of teeth is of normal breadth. Add to this the fact that crowding of the teeth very frequently gives rise to anterior protrusion of the upper incisors, and then add the effects of the greater frequency of caries, toothache, probable loss of teeth, possibly suppurating roots,

anemia, digestive troubles, ill health, ill temper, etc., following in their wake, and we may be justified in doubting whether man did, generation after generation, select such types. But let us look at the question from another point of view. If there has arisen in man an unconscious preference for small-jawed women, this must have come about in one of two ways; either those possessing this instinctive preference have survived, and the others, who did not possess it, have fallen out of existence, or there must have been a superorganic evolution of an ideal of beauty which was more or less universally recognized. I think the former idea is out of the question, and the latter would have no appreciable effect, compared with the natural, inherent and powerful passion which attracts the sexes. Since Darwin's time ideas on the subject of sexual selection have been greatly modified, and with regard to mankind, further than the effect which it has in selecting types with qualities arising from full vitality, good health and its concomitants, it has little effect, and it must always be ultimately controlled by natural selection.

Now let us consider what must have been the effect of natural selection on the teeth since the advent of civilization, or since many of the foodstuffs were more or less ridded by machinery and injudicious cookery of their accompanying fibrous part. I have pointed out that this gives rise to a diminished size of tongue, to a crowded and irregular set of teeth, and to caries. We know that when an organ breaks down from the effects of disease, the individual is at a disadvantage in the struggle for existence. That this is recognized with regard to the organs of mastication need hardly be more than mentioned, as already many civil, military and public appointments may not be held by those who have bad teeth, and indirectly the influence of diseased teeth on the general health is only too well known. Unfortunately, too, the influence on the general health may extend over the larger and more important part of a lifetime. Now dental caries is said to be the most prevalent disease that afflicts mankind, and irregularity of the teeth is the rule rather than the exception among the civilized. Since this very prevalent condition of irregularity predisposes to caries and its consequences, it will be obvious that those people who have rather small teeth will be more likely to have a regular set of teeth, as such teeth will be able to arrange themselves round the small civilized tongue with regularity. Consequently, since the advent of civilization and

concomitant refinement of foodstuffs those people with large teeth were likelier to be at a disadvantage in the struggle for existence through a considerable predisposition to a very prevalent disease, and so, on the whole, left fewer offspring than did those with relatively small teeth. We should also expect from this cause a correlative diminution of the alveolar part of the jaw at least. Now if we compare well-developed teeth among the uncivilized with well-developed teeth among the civilized, we find that the teeth of the latter have diminished in size. This theory therefore we see is strictly in accordance with facts accumulated inductively. We find, however, that the mental prominence is more developed among the highly civilized, and this suggests the explanation of the reason of the existence of the mental prominence. I think it might be reasonably supposed that it is, as it were, the rudiment of the more anterior prolongation of the body of the mandible in lower animals.

We find, too, that the third molar, more than any other, has diminished in size. This, according to the theory which I have put forward, is to be accounted for in the following way. As was pointed out in a previous article, the position of the teeth is determined to a great extent by the tongue. Now if during the advance of civilization the tongue from the causes mentioned has diminished in size, the prominence of the teeth, and so of the basi-alveolar line, must have diminished anteriorly and have brought about orthognathism. The whole arch of the teeth must be more posterior, and if the diminished size of the tongue is slight, as we may assume it was in the earlier stages of civilization, the arch of teeth would tend to be regular until appearance of third molars. When, however, the tooth is taking up its position, the more posterior position of the rest of the teeth makes it press unduly from behind, and either the whole arch of teeth must be thrust forward and a space be formed in front of the tongue, or some one or more of the teeth must take up an irregular position, and this latter we know does occur. Now as this would predispose to caries (and we know that even the most savage races are not wholly exempt from this disease) and the sequelæ already referred to, those individuals with relatively small third molars would have the advantage, and have a greater chance of leaving offspring than would those who had large third molars, and unlike the more anterior teeth, variability in shape during the diminution in size would be of relatively little consequence. Thus

we have a reason for the more rapid diminution in size of the third molar than of any of the others without assuming the inheritance of acquired characteristics. Hence, too, arises the benefit of retarded eruption of these teeth.—*Jour. Brit. D. A., Feb. 1900.*

* * *

RELIEF OF TEMPORO-MAXILLARY ANKYLOSIS BY EXCISIONS OF NECK AND CONDYLE OF LOWER JAW. Greig (*Practitioner*, Dec. 1899) holds that it is useless to discuss operation for the relief of ankylosis of the jaw, other than excision of the neck and condyle, because the results obtained by this procedure are so vastly superior to those obtained by other methods.

The incision commences about on a level with the upper margin of the orbit, just over the temporal artery, which can easily be felt pulsating. It is carried downward and slightly backward till it reaches the zygoma, a fingerbreadth in front of the external auditory meatus. It is then continued directly downward until it reaches the level of the anterior attachment of the lobule. The incision includes the skin, superficial and deep fascia; this flap is then reflected downward and forward. The auricular arteries of the superficial temporal are divided. The auriculo-temporal nerve remains untouched behind the incision, while the temporal artery and the upper branches of the temporo-facial division of the facial nerve, except perhaps a few fibers to the occipito-frontalis muscle, are carried downward and forward in the flap. It is sometimes necessary to divide the superficial temporal artery at the upper end of the incision, and if so, it is better secured with a suture than with a ligature, as the superficial fascia here is rather dense, and the ligature may be rubbed off in subsequent manipulations. The flap having been freed so far as the lower border of the zygoma, the masseteric fascia is freely divided along the margin of the bone, and it, with the parotid, is pulled downward and forward also. This is a transverse incision, but a vertical notch may be made also, if necessary, to allow of more free manipulation. The knife is now entered below the zygoma and carried down to the condyle, and thence a vertical incision is carried through the masseter muscle between its fibers as low as the lowest level of the sigmoid notch, and the muscular fibers are separated by a periosteal elevator. Guided by this instrument a chisel is now conveyed down to the bone. The chisel is next lateralized at the lower angle of the

incision, and the neck of the bone is cut through obliquely from below upward, the anterior part being cut at the lowest level of the sigmoid notch. It is important that the bone be chiseled through at its lower limit first, because it is below the level of the internal maxillary artery, but chiefly because the bone is in a way pyramidal, and it is easier to cut through the base of the pyramid after the apex has lost its support by separating it from the rest of the jaw. The chisel is then applied at the site of the joint, and the base of the pyramid divided. The loosened portion is then drawn forward into the wound with forceps, and the external pterygoid muscle cut loose. If now the ankylosis be unilateral, it will be found quite easy to separate the dental arches, but if this cannot be done the chisel is slipped forward across the sigmoid notch and the coronoid process divided. There is no bleeding. The wound is stitched up and no drainage is required.

The cases reported by the author constitute a series at once interesting and instructive—interesting because it shows that the condition is entirely curable, that the muscles, even after many years of disuse, resume their functions within a few days after their utility is made possible; and instructive because it shows that with a carefully planned incision and subsequent dissection the entire condyle, neck, coronoid process, and even a portion of the ascending ramus of the jaw can be removed with but little deformity and paralysis.

DOC RAFFLEBONES ON LIVE DENTAL TOPICS.

CANTO I.

Hear th' dentists talkin' bugs—
Bacteery bugs!
What a load of windy jabber nearly every dentist lugs!
How they chatter, chatter, chatter,
When societies convene—
Provin' only thet a smatter
Of th' subject o' ther clatter
Is th' utmost they c'n glean.
But they wrangle
An' they jangle
When they tackle this old tangle—
Each a vouchin' fer some special brand o' drugs.

While th' public keeps a goin'
On its keerless way, not knowin'
Thet its mouth's alive an' growin'
With a billion bloody bugs—
Er thet death is lurkin' near 'em,
An' th' people—they won't hear 'em
When the dentists try to skeer 'em
Into scrubbin' out ther mugs.
People ain't so dreadful skeery
In regard to tooth bacteery,
So they seem a little leery
When it comes to usin' drugs,
To prevent th' propagation of th' bugs—
Of th' bugs.
Of th' bugs, bugs, bugs, bugs—
Bugs, bugs, bugs—
Th' thousand, million, billion little bugs!

CANTO II.

See th' front teeth with th' crowns—
Golden crowns!
What a world o' giddy glitter in th' human mouth abounds!
In th' darkness o' th' night
How they glint an' glisten, bright,
If a ray just strikes 'em right—
Fair an' square.
How they glisten! how they glow!—
In th' daylight how they show!
How they shimmer, an' they glimmer, an' they glare!
An' how many people wear 'em—
Though ther's some as can not bear 'em
Who facetiously compare 'em
To a "horrid old tin can!"
But th' thing thet seems most curious,
Is thet beauty, sparklin' (spurious),
Gits so gosh-all-fired furious,
She could fairly lick a man
If, despite expostulation,
He insists on osculation
On her scintillatin', radiatin' tooth,

How she flares!
How she glares!
At the dentist how she stares,
If, forsooth,
He should, quiet-like, just mention
A perfessional intention
Of devisin' some prevention—
Some sort o' gineral plan—
Thet'll stop th' "silks an' laces,"—
Giddy girls, in lowly places,
From a spilin' purty faces
With th' brilliant front tooth crowns.
An' they'll wrangle
An' they'll jangle,
Till it seems a hopeless tangle!
Each a clingin' to th' notions he propounds,
But th' public keeps a goin'
On its keerless way, not knowin'
Thet th' gold it be a showin'
As a beauty mark's a fake—
Thet of all th' silly styles—
Aped by old er juveniles—
Thet of "scintillatin' smiles"
Takes th' cake!
But in matters of appearance
People ain't for interference;
An' the dentists they regard as sort o' clowns,
If they mention
An intention
Of devisin' some invention
Thet'll raise ther avocation to much higher, higher grounds,
An' prevent th' glint an' glitter of th' crowns—
Of th' crowns—
Of th' crowns, crowns, crowns, crowns—
Crowns, crowns, crowns,
Th' gleamin' an' th' screamin' golden crowns!—

Dental Topics.

MICHIGAN LAW EFFECTIVE.—A dentist practicing in Detroit without a license was recently fined $25.

The Dental Digest.

PUBLISHED THE TWENTY-EIGHTH DAY OF EVERY MONTH
At 2231 Prairie Avenue, Chicago,
Where All Communications Should be Addressed.

Editorial.

DATE OF NATIONAL MEETING CHANGED.

At the request of numerous members of the National Dental Association, a postal-card vote was taken to ascertain which of three dates, June 26, July 3 or July 10 would be most acceptable to the membership. The replies are nearly all in, and it appears that July 10 is favored by three-fourths of those who expect to attend the meeting, and the time of convening will therefore be changed to that date.

The state societies are now about to hold their annual meetings, and we would urge that they elect delegates who can attend the meeting, and thus broaden the sphere of usefulness of the National. All those who have papers which they wish to bring before the Association should communicate with the proper sections.

A GREAT VICTORY FOR THE DENTAL PROFESSION.

What is generally conceded to be the most important patent decision and decree in the history of dental jurisprudence was recently handed down by Judge Grosscup of the United States Circuit Court. We print the decision in full and also the affidavit of the clerk of the court:

Decree of February 15, 1900.

United States Circuit Court, Northern District of Illinois, Northern Division.
Thursday, February 15, 1900.

Present Hon. Peter S. Grosscup, Circuit Judge.

Robert B. Donaldson and the S. S. White Dental Manufacturing Co.
vs.
Dental Protective Supply Company of the United States. } 24191.

This cause coming to be heard upon full pleadings and proofs, and having been argued by counsel for the respective parties, Mr. Joseph C. Fraley and Mr. Melville Church, in behalf of complainants, and Mr. Charles K. Offield, in behalf of defendant, and the same having been duly considered by the court:

It is hereby ordered, adjudged and decreed that the Letters Patent declared upon in the above entitled cause, granted Robert B. Donaldson under date of July 14, 1885, and numbered 322,265, for an alleged New and

Useful Improvement in Dental Instruments, are invalid and void; and that the bill of complaint in the above entitled cause be therefore dismissed at complainants' cost for want of equity.

Northern District of Illinois, } ss.
Northern Division. }

I, S. W. Burnham, Clerk of the Circuit Court of the United States for the Northern District of Illinois, do hereby certify the above and foregoing to be a true and complete copy of the Decree entered in said Court on the 15th day of February, 1900, in the cause entitled Robert B. Donaldson and the S. S. White Dental Manufacturing Company vs. Dental Protective Supply Company of the United States, as the same appears from the original record of said court now remaining in my custody and control.

In Testimony Whereof, I have hereunto set my hand and affixed the seal of said Court at my office in the city of Chicago, in said District, this 20th day of March, 1900. S. W. BURNHAM, Clerk.

[SEAL.]

It will be seen that this decision completely invalidates the Donaldson broach patent, and dismisses with costs the complaint of the S. S. White Co. The litigation has extended over several years, and while the ultimate success of the Dental Protective Supply Co. was never doubted, the decision is exceedingly gratifying to every member of the Protective Association. The Trust has contrived for years to postpone the inevitable day when its claims would be put to the test, and its boasted patent rights would be shown in open court to be worthless.

Exactly two years ago—in March, 1898—the DENTAL DIGEST printed the following in an editorial, exposing the S. S. White Co., and boldly announcing our belief that the Donaldson patent was not worth the paper it was written upon:

The Protective Association, with its ally, the Dental Protective Supply Company, is engaged in a desperate legal fight to determine the validity and value of the Donaldson barbed broach patent. The S. S. White Dental Manufacturing Company claims to have the exclusive right to sell this broach, and the testimony already taken shows that the dental profession have thus far paid that company about $200,000, as royalty under this patent, and will have to pay about $200,000 more before the patent expires. We believe this patent to be entirely worthless and invalid, and that the money already filched from the dentists by the S. S. White Company is simply an act of spoliation without justification.

The result is precisely as predicted.

The importance of Judge Grosscup's decision can hardly be overestimated. Every dentist in the United States has a direct financial interest in this matter. It will readily be seen that while the decree

is primarily the ending of a protracted contest between two supply houses directly and the Trust vs. The Dental Protective Association indirectly, in a broader sense it is a great popular triumph for the whole dental profession. The defeated company represents corporate greed through unjust patent monopoly, while the Dental Protective Supply Co. stands for affiliation, organization and cooperation.

The porcine characteristics and qualities of the S. S. White Dental Mfg. Co. were never before so clearly shown. It is perhaps not generally understood that the S. S. White Co. do not make the Donaldson broach, but such is the case. They merely buy them from the patentee, and of course undertake no business risk whatever, merely having the exclusive right to sell the broach, and charging an exorbitant royalty by virtue of such privilege.

In view of the fact that the Donaldson patent has been declared invalid by the United States Circuit Court, we think the S. S. White Co. should refund the money it has extorted from the profession by virtue of its alleged patent. The fact that the Dental Protective Supply Co. during the pendency of expensive litigation sold the "Fellowship" broach at $1 per dozen, while the S. S. White Co. demanded $2.50 for every dozen Donaldson broaches, is a practical admission that $1.50 of the purchase price was collected by virtue of a worthless patent right. Now that the patent has been declared invalid, the S. S. White Co. in all common decency and fairness are under obligation to every purchaser of a Donaldson broach to refund the overcharge made under the assumption that the patentee was entitled to remuneration; and under certain conditions they could be compelled by law to disgorge the sum collected.

This litigation should furnish a striking object lesson to the dental profession, and we desire at this time to call the attention of every member thereof to the necessity of supporting the Dental Protective Association and its ally, the Dental Protective Supply Co. It is impossible for any dentist in his individual capacity to resist the encroachments of corporate monopoly of various kinds. Some sort of a patent can be secured on almost anything, but only a few of the thousands issued are really legal or represent any practical value. It frequently happens that an utterly worthless patent right is taken up by a powerful and wealthy corporation, and if there is no organized opposition the company continues to prey upon its hapless customers during all the years the spurious patent has to run. It is an

exceedingly significant fact that since the Protective Association has become a power in the profession the Trust has not exploited so many patents as heretofore.

Do not let it be understood that we are opposed to patents, for we are in favor of all legitimate ones. It is necessary for the Dental Protective Supply Co. to take out patents upon its inventions, for if it did not, some one in the employ of the Trust would probably be hired to patent said inventions, and in a short time suits would be entered against the Supply Co. and its friends to prevent them from using their own appliances. The Dental Protective Supply Co. was started as an ally to the Protective Association, and the time is near at hand when every dentist in the land will see what the Trust perceived some time ago, viz., that these two organizations are a powerful barrier against corporate greed and intimidation of various sorts. Perhaps the profession now sees why the Trust has not hesitated to adopt any measures, no matter how questionable, to wipe out if possible the Association and Supply Co.

We do not regard this decision as a personal triumph. It is a victory for the profession at large. The S. S. White Co. has never before met such a defeat—in fact, has never felt the curb. The collapse of the Donaldson broach patent is a demonstration of the efficacy of organized effort for defense. If the dentists of the United States will continue to sustain us in the work of protection and defense, the power of the dental Trust and other patent organizations may be still further reduced, and the result will redound to the benefit of every member of the profession.

Notices.

TRI-STATE DENTAL ASSOCIATION.

The Tri-State Dental Association of Indiana, Kentucky and Illinois will meet at Evansville, Ind., May 8–11, 1900.

W. H. BROSMAN, Sec'y, Albion, Ind.

NEW YORK STATE DENTAL SOCIETY.

The thirty-second annual meeting of this body will be held at Albany, May 9 and 10, 1900. The program is as follows: President's annual address, F. LeG. Ames; correspondent's report, R. Ottolengui; report of committee on practice, H. D. Hatch. Essays will be read by F. J. Capon, Toronto; Jos. Head and E. C. Kirk, Philadelphia; S. B. Palmer and C. H. Barnes, Syracuse; M. F. Smith, New York.

W. A. WHITE, Sec'y, Phelps.

MISSISSIPPI DENTAL ASSOCIATION.

The seventh annual meeting of this organization will be held at Jackson, Miss., April 4–6, 1900. The profession at large is cordially invited to attend.

A. B. KELLY, Sec'y, Yazoo City.

SOUTHERN WISCONSIN DENTAL ASSOCIATION.

The sixth annual meeting of this organization will be held at Janesville, May 2 and 3, 1900. A good program has been provided and a profitable meeting is expected.

J. H. REED, Sec'y, Lancaster.

IOWA STATE DENTAL SOCIETY.

The next annual meeting of the Iowa State Dental Society will be held at Dubuque, May 1–4, 1900. A profitable meeting is assured, and all reputable dentists are invited to be present.

I. C. BROWNLIE, Sec'y, Ames.

VERMONT STATE BOARD OF DENTAL EXAMINERS.

The meeting of this organization will be held at the Bardwell House, Rutland, May 23, 1900, at 7:30 p. m. for the examination of candidates to practice dentistry. Applications must be filed with the secretary on or before May 10, 1900.

G. F. CHENEY, Sec'y, St. Johnsbury.

TEXAS STATE DENTAL ASSOCIATION.

The next annual meeting of this society will be held in Dallas, May 15-17, 1900. Reduced railroad rates have been secured within the state, and a large attendance is expected. The profession is cordially invited to be present.

J. G. FIFE, Sec'y, Dallas.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of this body will be held at Grand Rapids, May 8, 1900, at 9 a. m., in the City Council Chamber. Applicants for examination must furnish materials, instruments, including engine, and gold for putting in one or two fillings, as may be required.

F. O. GILBERT, Sec'y, Bay City.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of this body will be held in Chicago, May 3–5, 1900, at the Chicago Business College, 67 Wabash Ave. Applicants must bring instruments and material so as to do practical work. Those desiring to take the examination should notify the secretary ten days before date of meeting.

J. H. SMYSER, Sec'y, 70 State St., Chicago.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-sixth annual meeting of this organization will be held at Springfield, May 8–11, 1900. Drs. E. H. Allen, chairman of the executive committee, and J. E. Hinkins, supervisor of clinics, promise an excellent array of papers and clinics. The entire program will be printed in the April number of this journal. All reputable dentists are cordially invited to attend.

A. H. PECK, Sec'y, Chicago.

KENTUCKY STATE DENTAL ASSOCIATION.

The thirtieth annual meeting of this organization will be held in Louisville, May 29–31, 1900. Owing to the meeting of the Confederate Veterans Association at the same time, a railroad rate of one cent a mile has been secured. The program will be published in our next issue. The committee have spared no pains to make the meeting a success, and a profitable time is assured. The profession is cordially invited to attend.

F. I. GARDNER, Sec'y, Louisville.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

In consequence of a contemplated new movement by the Association, with the probability of considerable benefit both to the state boards and the more advanced colleges whose educational standards are high, the secretary most earnestly requests a new list of officers and members from the officers of the several state boards in the United States and Territories. An early compliance with this request will be heartily appreciated.

CHAS. A. MEEKER, Sec'y, 29 Fulton St., Newark, N. J.

RESOLUTIONS ON DEATH OF DR. TENISON.

At a meeting of the First District Dental Society of the state of New York, March 13, 1900, the following resolutions were presented by Dr. John I. Hart and adopted: Whereas, Dr. Wm. Deane Tenison has been removed by death, it becomes our painful duty to take notice of his demise: therefore be it resolved as the sense of this society, that in the death of Dr. Tenison the profession has lost a distinguished member. As a man Dr. Tenison was genial and affable; as a dentist he was skillful and conscientious. Entering upon the study of dentistry at an early age when all was crude, he wrought his way to success and high position by zeal and industry. We shall miss Dr. Tenison from our ranks. Let us therefore linger for a moment to pay his memory this tribute of respect. Be it further resolved, that a copy of these resolutions be sent to his family and to the dental journals.

B. C. NASH, Sec'y.

LATEST DENTAL PATENTS.

644,443. Dental tool for expressing mercury from amalgam, David Aiken, Winnsborough, S. C.
643,868. Denture, Willis H. Dwight, Le Mars, Ia.
643,898. Dental oven, Harry M. Hill, St. Louis.
644,355. Fountain cuspidor, George B. Haycock, Chicago.
644,583. Artificial denture, John H. Doyle, Atlanta, Ga.
644,640. Dental chair, Gideon Sibley, Philadelphia.
644,641. Dental chair, Gideon Sibley, Philadelphia.
644,642. Dental chair, Gideon Sibley, Philadelphia.
644,643. Arm rest for dental chair, Gideon Sibley, Philadelphia.
644,644. Back rest for dental chair, Gideon Sibley, Philadelphia.

644,705. Impression band for dentistry, George Evans, assignor to Evans Co., New York.

644,803. Artificial tooth crown, Henry D. Justi, Philadelphia.

644,932. Dental tool, Clinton W. Miller, Chicago.

644,970. Dental flask, Thomas G. Donaldson, Baltimore.

LABELS.

7,379. "Thymol Myrrh" for tooth-paste, Charles Wright Co., Detroit.

News Summary.

E. H. ALLEN, a dentist at Girard, O., died March 8, 1900.

J. T. STETSON, 62 years of age, a dentist at Boston, died March 12, 1900.

A NEW YORK doctor advertises: "Come to me before life is extinct."

J. H. NELSON, a well-known dentist at North East, Pa., died Mar. 19, 1900.

Z. T. LAROCHE, aged 76, a dentist of Allentown, Pa., died March 22, 1900.

H. C. STICKER, 62 years of age, a dentist at Milton, Pa., died Feb. 28, 1900.

S. P. LARMER, a dentist at Albany, Mo., died from paralysis Feb. 20, 1900.

H. A. PITCHER, 52 years old, a dentist of Neillsville, Wis., died Feb. 24, 1900.

H. M. MALLERY, 39 years old, a dentist at Springfield, Mass., died Feb. 20, 1900.

A. H. TAYLOR, a dentist of Washington, D. C., died Feb. 28, 1900, aged 74 years.

J. S. DEAN, a retired dentist at Easton, Md., aged 77 years, died March 11, 1900.

W. D. TAYLOR, 51 years of age, a dentist at Brownsville, Pa., died March 16, 1900.

ARMY MULES?—A man in Iowa advertises himself as "Veterinary Surgeon and Dentist."

JAS. N. TRUESDELL, a pioneer dentist of Elgin, Ill., died at Orange, Cal., Feb. 26, 1900.

CHAS. A. MURRAY, a dentist at Van Wert, O., died at the age of 46 years, Feb. 21, 1900.

L. L. LANDON, 61 years of age, a retired dentist of St. Joe, Mo., was killed by a train March 6, 1900.

C. F. WOELZ, a dentist at Indianapolis, Ind., 39 years of age, died from heart disease March 15, 1900.

THERE'S THE RUB.—He: What would you do if I should die and leave you? She: Leave me how much?

PLINY L. LAWRENCE, one of the pioneer dentists of Chicago, died suddenly of pneumonia March 2, 1900, at the age of 44 years. He had practiced in Chicago for 25 years.

T. R. BROWN, 75 years of age, who had practiced dentistry for 45 years, died at Philadelphia March 5, 1900.

J. A. STULTZ, 27 years old, a dentist at Long Branch, N. J., died from an overdose of morphin March 1, 1900.

BALTIMORE DENTISTS OBJECT.—They fear that the medical bill now before the legislature will affect them in practice.

FRANK H. FISHER, a dentist, the husband of Lillian Berri, the prima donna, died March 14, 1900, from appendicitis.

R. E. SHARP, 30 years old, a dentist at Edgerton, Wis., died Feb. 22, 1900, from an overdose of morphin taken accidentally.

ARMY DENTAL BILL.—On Feb. 27 the House Committee on Military Affairs acted favorably on the bill providing dentists for the army.

IN THE INTERMEDIATE STATE.—"And how many children have you, Mrs. Murphy?" "Foive. Two livin', two dead, and wan in Philadelphy."

GEO. W. WARREN, a prominent dentist of Philadelphia, was recently awarded a verdict of $2,500 for injuries received in a railway collision.

EVANS' WILL SETTLED.—The dispute over the late Dr. Evans' will has been settled, and the Philadelphia Museum well receive nearly $3,000,000.

RESTRICTION.—"Shall I go with you and hold your hands while you have your tooth pulled?" "I would rather you would go with me and hold the dentist."

INDIANA BOARD ACTIVE.—A number of complaints have been lodged against illegal practitioners in Indiana by the state board, and the cases will soon come to trial.

MISSISSIPPI EXAMINING BOARD.—The governor has appointed the following members: P. P. Walker, J. B. Broadstreet, W. R. Wright, F. B. Ferruill, T. C. McNair.

ALTRUISTIC.—A dental college has been incorporated at Colorado Springs, Col., and in the articles of incorporation it is stated that the move is not "for pecuniary profit."

"GOULD'S POCKET MEDICAL DICTIONARY" has reached its fourth edition. It is a useful little volume of 837 pages, containing 30,000 words. Price $1. P. Blackiston's Son & Co.

NEW YORK AFTER ILLEGAL PRACTITIONERS.—An operator in one of the painless dental parlors of Brooklyn was arrested March 17, for practicing dentistry without a license.

ALABAMA DENTAL EXAMINERS MEET.—This organization will meet in Mobile, Ala , Monday, May 7, 1900, at 10 a. m., for the examination of applicants for license to practice.

NOT OF DIVINE MANUFACTURE —James, aged three, has shown a lively interest in a "plate" worn by his uncle. He recently asked his mother "Who made my teeth," and when told that "God did," he inquired: "Does he make plates too?"

DENTIST FOR ENGLISH ARMY.—One dentist has been appointed for service in South Africa. He has, however, arranged for a corps of assistants who will probably be ordered to follow him.

MAKING SET OF TEETH IS DENTISTRY.—A judge in Oregon has recently decided that making and fitting a set of false teeth is an act of dentistry, and that only a dentist can perform such act.

PAID UP.—Little Clara: "Dr. Cubebs is often at our house, but I never see him at yours."

Little Bessie: "Of course not. We don't owe him anything."

PRESERVE YOUR FILES.—The constant requests which we are receiving for back numbers of the DIGEST suggest a note of warning to our subscribers that you preserve your files carefully, as our surplus stock is almost exhausted.

RELIEF.—Young Doctor (exultantly): Well, I've been successful with my first patient.

Old Doctor: Of what did you relieve him?

Young Doctor: Ten dollars.

SMALL FEES.—The record of small fees for lodge practice, according to the *Bulletin Med.*, is now held by Dr. Larcher, who received from the local lodge in a small town in France 60 centimes, about equivalent to 12 cents, for a night labor case.—*Jour. A. M. A.*

TO HELP CONSUMPTIVES.—It is proposed to establish from Denver south a series of plantations, which shall be under state control, but so far as possible will be made self-sustaining by the labor of their inmates. These are to be opened to those consumptives who can afford the price of transportation.

"PRACTICE OF DENTAL MEDICINE."—This little volume by Geo. F. Eames, M.D., D.D.S., should be of value to dental and medical practitioners. It was recommended for adoption by the committee on text-books of the National Association of Dental Faculties. S. S. WHITE CO., Philadelphia.

TO SET CEMENT RAPIDLY.—If it is desired to have the cement set quickly and remain very hard, add a sparing amount of finely powdered borax to the cement powder and the effect is obtained. This method will give good results in bridgework and in fillings which indicate a quick-setting cement.

CARBOLIC ACID TO BE DEARER.—The price of carbolic acid has risen quite rapidly during the past week or two, owing to the impossibility of importing any from Great Britain. The scarcity there is said to be due to the fact that this substance is necessary in the manufacture of lyddite.—*Med. Rec., Jan. 1900.*

COLORED GOLD ALLOYS.—Green gold—Fine gold 2 to 3; silver, 1. Brass yellow gold—(1) Fine gold, 1; silver, 2. (2) Fine gold, 4; silver 3; copper, 1. Pale red gold—Fine gold, 1; copper, 1. Grey gold—(1) Fine gold, 80; silver, 8; steel filings, 2. (2) Fine gold, 4 to 5; steel filings, 1.—*Jour. d. Goldschmiedek.*

ENGLISH DENTISTS DISCRIMINATE.—It is claimed that since 1893 the British government has refused to register American dentists on the ground that

the English dental college course is four years, while that in our schools is only three, and that our students are therefore not so well qualified to practice. The state department will take the matter up.

EMULATION OF KANSAS.—Following the example of Rev. Chas. M. Sheldon, the clergyman who ran the Topeka *Capital* for a week as "Jesus would do," the editor of a weekly in Maryland announces that next week he will begin running his paper as Captain Kidd would have run it, and he notifies all delinquent subscribers to be on their guard.

SPOKANE (WASH.) DENTAL ASSOCIATION.—An organization with the above name was organized Feb. 26, 1900, with the following officers: Pres., M. D. Thurston; V.-P., C. F. Hanchett; Sec., A. B. Bailey; Treas., H. D. Hawver; Com. on Constitution and By-Laws, H. D. Hawver, F. R. Fisk, W. A. Wright: Com. on Entertainment, F. R. Fisk, C. Mann, E. Pitwood, G. M. Freeman.

ODONTOLOGICAL SOCIETY OF WESTERN PENNSYLVANIA, at its annual meeting, held March 13, 1900, elected the following officers for the ensuing year: Pres., J. F. Thompson; V.-P., C. W. Bard; Sec., W. E. Van Orsdell; Asst. Sec., J. A. Calhoon; Treas., J. A. Libbey; Board of Censors, H. J. Horner, J. A. Calhoon, W. H. Sowash; Ex. Com., S. M. Stauffer, A. G. Rinehart, J. H. Robinson.

PROTECTION OF THE EYES WHILE SOLDERING.—By W. T. Jackman, D.D.S., Cleveland. Those who do much solder work will find an immense relief from the glare of the flame by the use of plain smoked glasses when soldering. They should be quite dark, for the glare of the light will enable one to see clearly through glasses so dark that he otherwise could see through but dimly.—*Ohio Journal.*

PERMEABILITY OF HYPODERMIC NEEDLES.—Belin writes to the *Polytech. Med.* that he does not care to put his hypodermic needles to his mouth to blow out the drop or so remaining after an injection. He keeps a small rubber bulb and tube with the syringe, and after using the needle removes it and fits the tube of the bulb over the end. As the bulb is squeezed all the fluid is expelled from the needle.—*Jour. A. M. A.*

OHIO DENTAL BILL.—A bill was recently introduced before the senate of Ohio providing that the power to license dentists in the state shall be absolutely under the control of the state dental society, which is empowered to submit a list from which the governor must make his selections for the state board of examiners. No colleges which are not members of the National Association of Dental Faculties shall be classed as reputable institutions.

NOT QUITE MAD.—Mrs. Peck: Henry, what would you do if I were to die suddenly?

Henry: Pray don't talk of such a thing. I think it would almost drive me crazy.

Mrs. Peck: Do you think you would marry again?

Henry: Oh, no; I don't think I would be as crazy as that.

CANADIAN DENTISTS PETITION LEGISLATURE.—The dentists of Ottawa have presented a bill asking that, inasmuch as the teeth of children in the public

schools were suffering from neglect, an inspector should be appointed who should report on the condition of the teeth of the children not having certificate from the family dentist, and such report should be forwarded to the parents of the children, with instructions to have the defective teeth attended to.

DENTAL TRADE ASSOCIATION.—According to newspaper report the Dental Trade Association of the United States will hold its annual convention at Atlantic City, N. J., in June. Will some of the Trust houses kindly explain what the Dental Trade Association is, and also the object for which it is created?

LOUISIANA STATE DENTAL SOCIETY.—At the annual meeting of this organization, held Feb. 24, 1900, the following officers were elected for the ensuing year: Pres., C. V. Vignes; First V.-P., R. L. Zelenka; Second V.-P., A. L. Plough; Treas., C. Mermilliod, Sr.; Rec. Sec., C. N. Gibbons; Ex. Com., V. K. Irion, P. J. Friedrichs, C. Ratzburg, T. M. Comeoys, C. Mermilliod, Sr.; Board of Dental Examiners, G. A. Collomb, J. E. Woodward, R. L. Zelenka, C. B. Johnston, J. S. Couret.

BIBLICAL KNOWLEDGE.—Young men before entering one of the principal medical schools of this country are examined as to their general knowledge. One of the questions given to the candidates for one of these schools last year was: "What are the names of the books of the Bible?" Of one hundred and twenty answers, only five were correct. Among the names of books given were: "Philistines," "Marcus Aurelius" and "Epistle to the Filipinos."—*February Ladies' Home Journal.*

REMOTE RESULTS OF DISEASED DECIDUOUS TEETH.—M. Parinaud has shown that very slight dental lesions, especially at the age when the deciduous teeth are being lost, may be the starting-point of osseous and periosteal disease of the lower border of the orbit, and of fistulas in the region of the lachrymal duct and the lower eyelid; also of periostitis of the nasal canal. Intimate relations exist between the cuspid tooth and the orbital and lachrymal regions.—*Alph. Pickin, La Monde Dentaire.*

UP-TO-DATE BLACKMAILING.—A student was recently arrested at Gratz on a charge of endeavoring to obtain money by menaces from an old lady whose dwelling he threatened, failing cash, to inundate with a selection of pathogenic microbes. It is even stated that when searched the ingenious but indelicate student was found in possession of cultures of cholera, tetanus and typhoid fever bacilli. This is quite a novel application of bacteriological knowledge but hardly one which can be commended for imitation.

ATHETOSIC MOVEMENTS OF FINGERS A SIGN OF IMPENDING CHLOROFORM ASPHYXIA.—Koblanck (*Semaine Med.*) calls attention to the rhythmic athetosic movements which occur sometimes in chloroform anesthesia as the reflexes are abolished. He considers them a warning of impending asphyxia. The administration of the chloroform should be suspended at once and the mask removed, when the movements will subside and the narcosis proceed smoothly. Otherwise asphyxia speedily follows.—*Jour. A. M. A.*

"INTERSTITIAL GINGIVITIS, OR SO-CALLED PYORRHEA ALVEOLARIS," Eugene S. Talbot, M.D., D.D.S. Apologies are due the author for the tardy announcement of this interesting work. Of it the committee on text-books of the National Association of Dental Faculties reported that "It contains evidence of laudable and extensive research, but the subject is still a matter of so much controversy and diversity of opinion as to make unfeasible a text-book upon it at the present time." S. S. WHITE CO., Philadelphia.

MECHANISM OF TENDON CRACKING.—It is well known that there are certain individuals who make a cracking sound in performing some movements. In a general way we have all taken it for granted that the cracking was due to the slipping of some tendon. Dr. Schuster lately demonstrated this in Berlin *Deutsche Med. Woch.* on a man who made the noises with his feet and hands. In the case of the foot the tendon of the peroneus slipped over the external malleolus, and in that of the hand the tendons of the flexor digitorum profundus slipped over the heads of the metacarpal bones.—*N. Y. Med. Jour.*

VERBIAGE.—The following is a verbatim copy of the discussion by a member of a prominent state dental society on a paper read before that body: "I will say, while I am not prepared to discuss the paper, that I am exceedingly pleased with it. I am interested along that line, and it is in the right direction. While I have had no experience that I could relate as being especially apropos at this time, I can say that I was glad to hear that paper, and I think that the interest in that particular line is increasing and can not help but bear excellent fruit." Yet we wonder why there is not sufficient interest taken in society meetings.

EFFECT OF COLD ON MICROORGANISMS.—Prudden has shown that a temperature many degrees below the freezing-point is ineffectual in destroying the typhoid bacillus, but now it has been shown that no known degree of cold will destroy these and some other pathogenic microbes. A paper was read last week before the Royal Society in London, in which a number of startling experiments by Professors Dewar and MacFadyen and Sir James Creighton Brown were reported. In these experiments typhoid, cholera, diphtheria and other pathogenic bacteria were submitted for twenty hours to the temperature of liquid air (—310 deg. F.), and were shown later by culture tests to be still alive.—*Med. Record.*

DENTISTRY IN BELGIUM.—The government in Belgium is considering a bill advocated by the majority of physicians to suppress the diploma of dentistry and allow only the practice of dentistry to qualified physicians as a branch of the medical sciences, like laryngology, ophthalmology, etc. Beco, the chairman of the special committee, enumerates among the reasons for this step the overcrowding of the medical profession and the necessity for considering dentistry as an important and lucrative specialty in the domain of general medicine. The standard that has hitherto been required of dentists has been so low that some change is imperative, and suppression of special diplomas to dentists seems the simplest and most practical solution of the question under the present circumstances.—*Jour. A. M. A., Feb. 1900.*

NEBRASKA'S MEDICAL STANDARD.—The four-year clause of the Nebraska medical law has been sustained by the district court in that state. An applicant who presented a three-year diploma was refused a certificate in October last by the medical board. He appealed to the board of health, consisting of the governor, attorney general and superintendent of public instruction, and it overruled the decision of the medical board and ordered that a certificate be issued. The Lincoln Medical College, a four-years' graded school, applied for an injunction in the district court at Lincoln on the ground that the proposed action was a direct violation of the medical statute. On the showing made, the injunction against the board was made permanent, thus upholding the right of the legislature to fix the standard of medical education for the state.—*Jour. A. M. A.*

HUTCHINSON'S TEETH.—Dr. Eugene S. Talbot said that Jonathan Hutchinson never intended that his name should be used, as it has been for the last fifteen years, in regard to the peculiar form of teeth named after him. He distinctly stated that only about 10 per cent of the cases of syphilis present notched teeth. In the opinion of Dr. Talbot, any constitutional disease, or any condition of the mother in which there is starvation or worry, causing malnutrition, will produce this arrest of development of the fetus *in utero* at about the third to the fourth month. The teeth begin to develop at the sixth week of fetal life. The arrest of development is simply a return to the atavistic condition. The structures of the face, jaws, alveolar processes and teeth are transitory, and therefore more liable to become affected than any other structure of the body.—*Jour. A. M. A.*

RAILROAD GRAMMAR.—"What was the next station?"

"You mean what is the next station."

"No. What was it, isn't it?"

"That doesn't make any difference. Is is was, but was is not necessarily is."

"Look here, what was, is, and what is, is. Is was is, or is is was."

"Nonsense. Was may be is, but is is not was. Is was was, but if was was is, then is isn't is or was wasn't was. If was is, was is was, isn't it. But if is is was then—"

"Listen. Is is, was was, and is was and was is; therefore is was is and was is was, and if was was is, is is is, and was was was and is is was."

"Shut up, will you! I've gone by my station already."—*Life.*

FREE USE OF DRINKING WATER IN ACUTE HEMORRHAGE.—Dr. Louis Kolipinski (*Maryland Med. Jour.*, Dec. 30, 1899) recommends that under circumstances where transfusion cannot be practiced for want of apparatus or from any other reason, the refilling of the vascular system may be effected by the simple expedient of causing water to be given to drink, or introduced into the stomach with a tube almost continuously until the bloodless victim begins to revive and react. It is, he says, astonishing to see to what an extent a liberal supply of water can be pushed, and with it is apparent a return of strength and mental activity, slowing and deepening of the respiration, and the restoration of volume and tension to a pulse that before

could not be felt. The author records a case of hemorrhage during typhoid fever in which this method worked admirably. It is useful also in vaginal, obstetrical and other medical hemorrhages.

TO CUT GOLD FOIL.—By Henry Barnes, M.D., Cleveland. In preparing gold foil in the form of ribbons I have found the following an easy and effective method: Take a sheet of writing or other white paper, place one sheet of gold on this, then cover with another sheet of paper, and so on until you have as many sheets of gold as you wish to use. After placing the last sheet of paper over the foil, fold the whole over twice, as you would fold a letter, then with shears cut paper and all into strips of desired width. In this way the foil does not fold on itself for there is paper between each sheet. When cut, remove the strips of paper and the foil will be found to be cut true, with no torn edges, it has not come in contact with the hands, and is in the best possible condition for working.—*Ohio Journal.*

[Why not simply leave the foil in the original books, thus saving time and labor?—ED. DIGEST.]

INFLAMMATION OF LIP.—Malcolm Morris (*British Journal of Dermatology*, August) reports a case of desquamating and suppurating superficial inflammation of the lower lip in a woman aged forty. This condition had lasted for over six months and had been a source of great disfigurement and discomfort to the patient When brought recently for treatment it was observed that she suffered severely from pyorrhea alveolaris (Riggs' disease). Most of the teeth had been extracted, and the gums were in a much healthier condition, with the result that the lip had improved very much, and slight desquamation of the epithelium was all that could be observed. Much atrophy of the mucous and submucous tissues had resulted. Dr. Galloway said that he considered many cases of chronic inflammation with desquamation of the lip depended on purulent conditions of the gums, and this should always receive the first attention during the treatment of these cases.

MEDICAL ETIQUETTE AND A LEGAL DECISION.—We have heard of medical etiquette occasionally being the subject of attack and ridicule in court proceedings, but a recently decided case shows that it has at least a legal sanction. A physician was called to a case and rode six miles only to find another physician in charge. He therefore refused to treat the patient, but sent in a small bill for his time. Being obliged to sue for his pay, he was met with the defense that he had rendered no service and was therefore entitled to no pay. The county judge, however, held that the observance of medical etiquette was legitimate for the physician, and that when called to see a case and finding it in charge of another, the law implied that he was not obliged to take the case. The decision was therefore in the doctor's favor, the judge recognizing even the finer points in medical ethics, which are not always duly appreciated by jurists.—*Jour. A. M. A.*

MILK AS AN ANTIDOTE.—The *Pharmaceutical Era* calls attention to the fact that milk is a useful antidote to most cases of poisoning. By its fatty matter and its casein it protects the mucous membrane against the corrosive action of acids, alkalies and other caustic or irritant substances. The chemi-

cal role of casein is here very remarkable and valuable. It is able to fill the double part of acid and base, in the presence of compounds with which it is brought in contact. It not only coagulates under the action of acids by combining with them, but it also yields a precipitate with most mineral bases, forming insoluble caseates. If precipitation does not immediately take place with a product having a given reaction—acid or basic—this precipitate will appear through the intervention of another substance of contrary reaction. Dr. Crowzel proposes to add to the milk five per cent of borate of soda. This salt is nontoxic and is employed because it precipitates as insoluble borates all the mineral bases, except harmless or slightly poisonous alkaline bases.

A HINT TO DENTAL AND OTHER WRITERS.—Say what you have to say and stop. Do not beat about the bush in order to have a paper fill forty-five minutes instead of fifteen. Some papers have as many twists in them as the parody of "Hiawatha," which follows:

With the skin he made his mittens;
Made them with the fur side inside,
Made them with the skin side outside.
He, to get the warm side inside,
Put the inside skin side outside;
He, to get the cold side outside,
Put the warm side, fur side, inside.
That's why he put the fur side inside,
Why he put the skin side outside,
Why he turned them inside outside.

BURDEN OF PROOF AS TO VALUE OF SERVICES.—In Harrington vs. Priest, wherein it was sought to recover $250 for dental services, and the defendant set up a counter claim for $1,000 damages for poor work, the supreme court of Wisconsin reverses a judgment for the plaintiff, on account of error in the instructions given the jury. It holds that the burden of proving that the services rendered were performed with reasonable skill, and were worth the sum mentioned, was on the plaintiff. And it approves of the instruction: "The burden of proof, so far as this case is concerned, rests upon the plaintiff to establish his side by a fair preponderance of the evidence, which is sometimes called the 'down weight of evidence.' If you find from the testimony as I say, that the plaintiff did this work in a reasonably careful and skillful manner—in such manner as dentists of ordinary standing, of good standing in this community or this vicinity would have done it—and that the price he has charged is a reasonable price, then you should return a verdict in favor of the plaintiff for the full amount claimed." But the supreme court says that the judge went wrong when he added to this the further and inconsistent charge that, in establishing the fact that work was improperly done, the burden is on the defendant. Confessedly, says the supreme court, the plaintiff had the laboring oar. There was no burden on the defendant on this issue to show affirmatively that the services in question were negligently [or unskillfully performed, or that they were not worth the sum

claimed. If his evidence in defense left the issue in doubt or uncertainty, the plaintiff could not recover. Under these circumstances, it could not be true that the burden rested on the defendant, "in establishing the fact that the work was improperly done." But when it came to the question of damages under the counter claim, or the other issue, then, the court goes on to state, the defendant could not secure a recovery except that he establish a claim therefor by the preponderance of the evidence.—*Jour. A. M. A., Dec. '99.*

MACROGLOSSIA is a very rare condition. J. J. Pratt (*Indian Med. Gazette*) reports a case in a boy 3½ years old. The tongue protruded about an inch and a half between the teeth, the mouth was constantly open, saliva dribbling, and the patient was unable to masticate food and spoke and drank with difficulty. The tongue had become inflamed eight months before and had gradually enlarged. Under chloroform anesthesia the tongue was drawn out, transfixed by ligatures, which were crossed and tightened, a round incision was made through the whole thickness of the organ behind the teeth marks, and the prolapsed portion removed. The patient made a rapid recovery, and on leaving the hospital was able to eat, drink and speak without difficulty.

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